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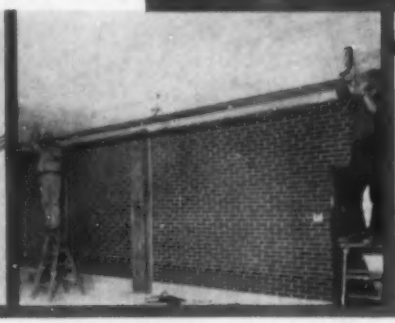

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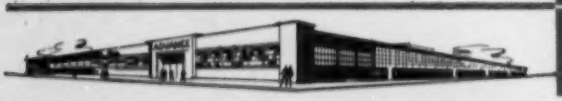

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**Volume 36** **Number 10**

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# Economic comment

*by J. Whitney Bunting, Ph.D.*
***Contributing Economics Editor***

### The housing situation

Increasing apprehension is being shown by the nation's builders as they review the record of housing starts for the first six months of 1956. In fact they are so worried at present that an appeal has been made to the federal government to take all possible measures to stimulate the industry.

Some relief may come in the form of relaxation of credit curbs although even this may not be sufficient to pick up the slow market. What may be indicated is some strong government action in the private home construction field that could replace the lost drive of the private housing business.

However, the impact of the housing doldrums is not felt by the construction industry alone. The manner in which homes are merchandised today has incorporated many associated businesses into the home field. For example many new appliances are now offered as integral parts of the "home package." Few new developments do not include such items as kitchen appliances of diverse character in addition to the standard water and home heating devices. Consequently the optimistic forecasts of sales for some of these allied industries for 1956 may be depressed by the housing decline.

The complaints of the home builders cannot be ignored in an election year. Some positive action may be forthcoming, but only if sufficient pressure is generated by interested parties to show the economic effects of this depressed segment of the nation's industry. Appliance dealers with prospects of sales of "items" or "systems" to construction firms might well consider the value of joining this pressure action. They too stand to lose much by too stringent economic and financial controls for the balance of the year.

### Consumer credit—too high?

A recurrent charge that the United States is faced with an already too-expanded credit picture seems to show no validity after critical examination. It has frequently been stated in these comments, and by other writers as well, that in a rapidly expanding economy with inflationary aspects and continued expansion of personal savings, credit expansion is normal and is to be expected.

As of the end of the first half of 1956, personal credit had increased to almost $30 billion, certainly an extremely high figure. Yet this increase is directly in line with increased productivity, higher wages, and a continued high level of personal savings.

This condition shows now a change in consumer buying habits that marketing experts have been alluding to for some time now. Many people now tend to buy consumer durable goods on credit even though their personal savings are great enough to allow direct cash purchase of the item. Whether this is good or bad psychologically is a moot question, but it seems to be increasingly important as an economic way of life.

This trend has been used by some writers to indicate a feeling of insecurity in the minds of citizens even though they have had a period of both war and peace prosperity. Faint remembrance of dark days in the thirties are possible causal factors, but this is not borne out fully by the age breakdown of those responsible for expanding the credit mechanism.

A large portion of the nation's personal credit debt has been occasioned by the purchases of the under 40 years of age group. Certainly this group has only limited memories of the Great Depression era. Yet there is a definite trend among buyers to use the credit mechanism even though savings are available for purchase use. The moral of this is that worries over heavy personal credit expansion seem to have no basis of fact under present economic circumstances.

### Retail volume high

Reports offered by the United States Bureau of the Census covering the first six months of 1956 paint a very good picture of the year's prospects in the area of retailing. Unlike housing starts (down about 18 per cent from last year), retail sales show a healthy increase of 4 per cent over 1955's boom figures. As the nation's stores move into the heavy holiday buying season there appears to be no real reason why a new record should not be established.

Sales during the first six months of 1956 amounted to a healthy $91,400,000,000. During this record breaking period all types of retail outlets showed general increases with the exception of auto dealers and lumber, building and hardware stores. The latter three groups remained stable in comparison with 1955 records. Leading gainers in the tabulations of the Census Bureau were outlets distributing apparel, petroleum products, and foods.

The strength in this picture is the fact that in spite of certain weaknesses that developed in the year these trends have been more than offset by heavy gains in other areas. The auto industry was in the doldrums during the first quarter of the year and only now seems to be gaining back a portion of the ground lost earlier. Predictions now show that in this area sales should remain close to 1955 levels for the balance of the year. Home building, mentioned earlier, has been a part of the problem of the lumber and hardware outlets. Even with the decline of housing starts, however, these outlets have kept pace with their 1955 records

*(Continued on page 131)*

**Dr. Bunting is a well-known economist and educator having special knowledge of the South.**

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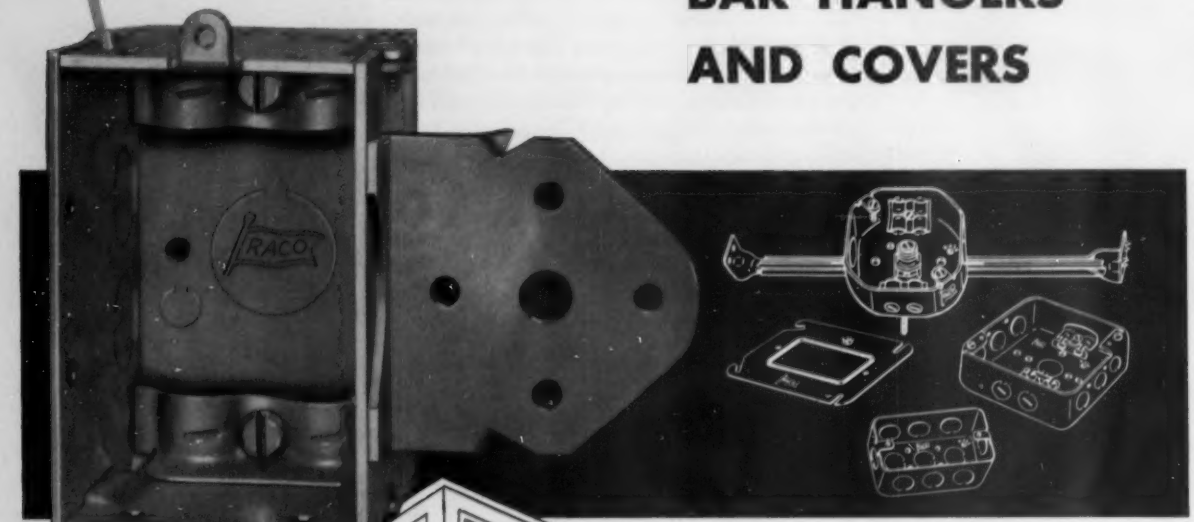


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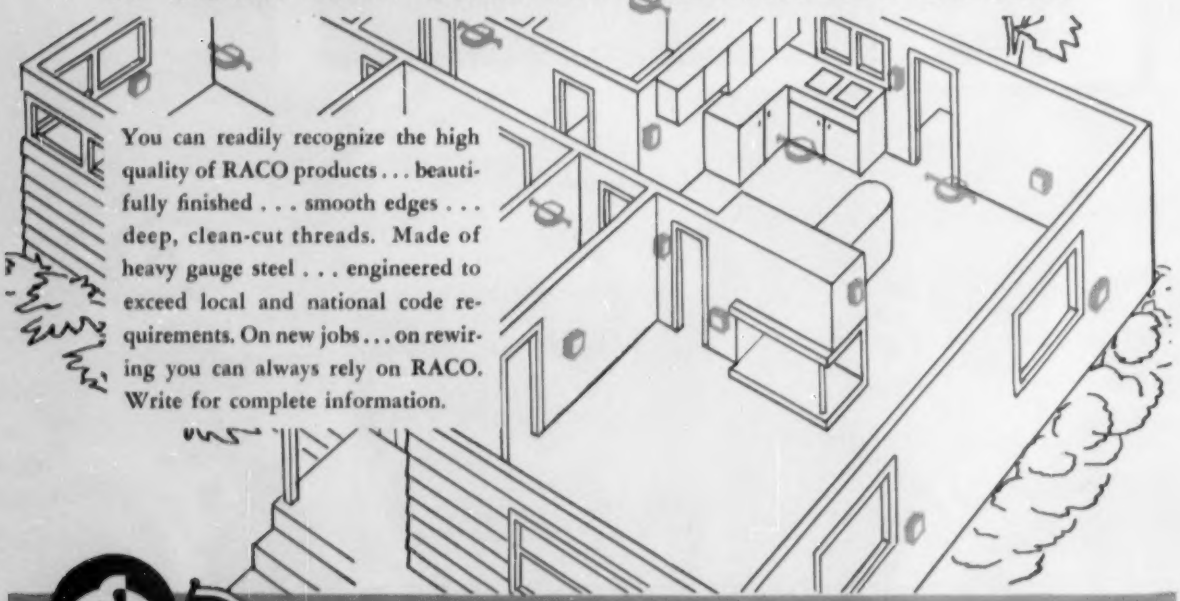

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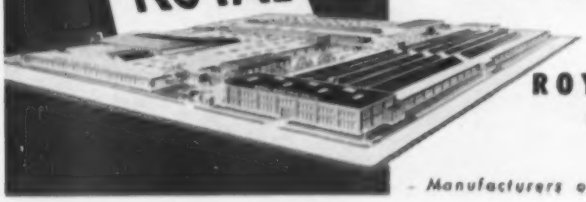

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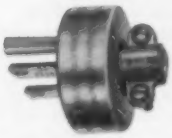

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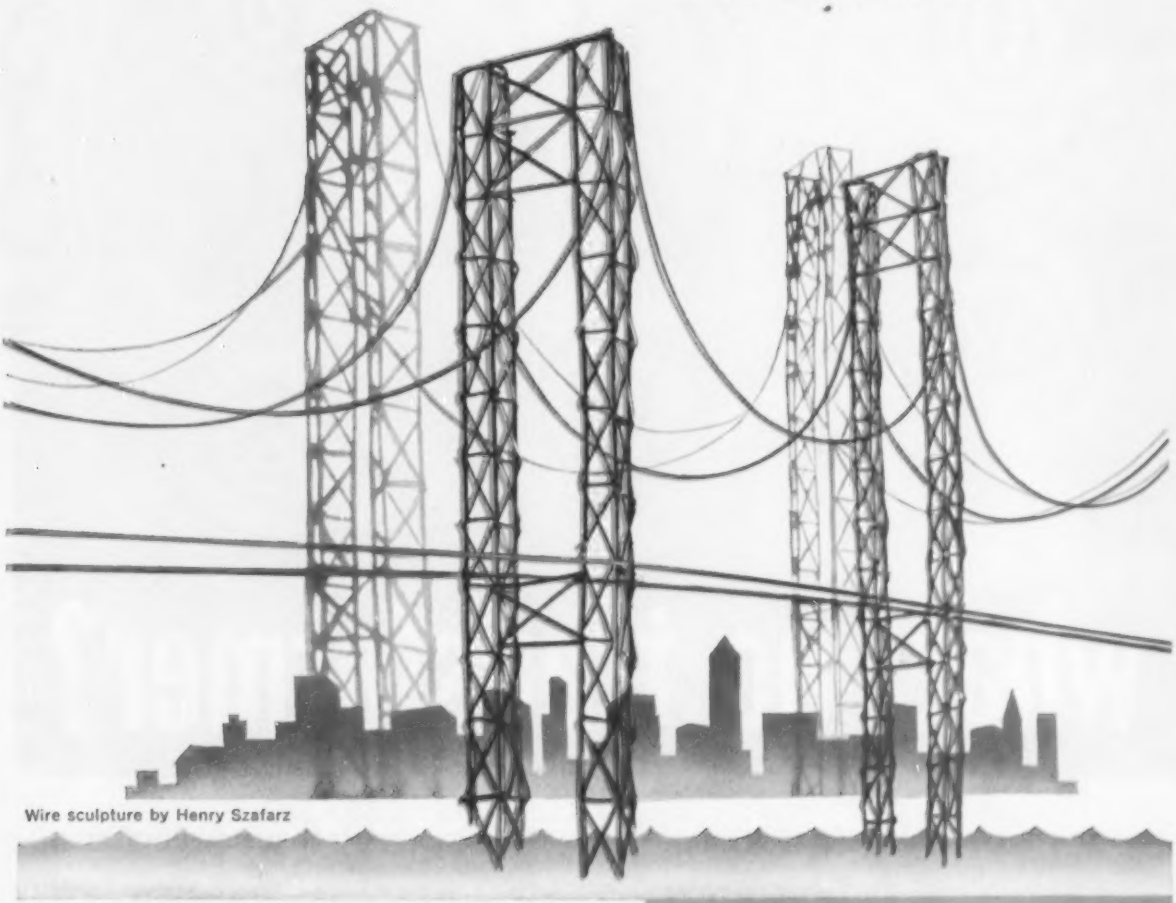

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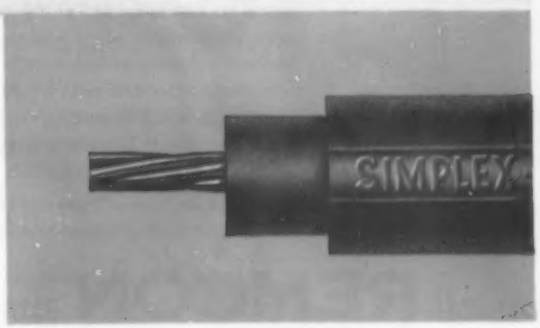

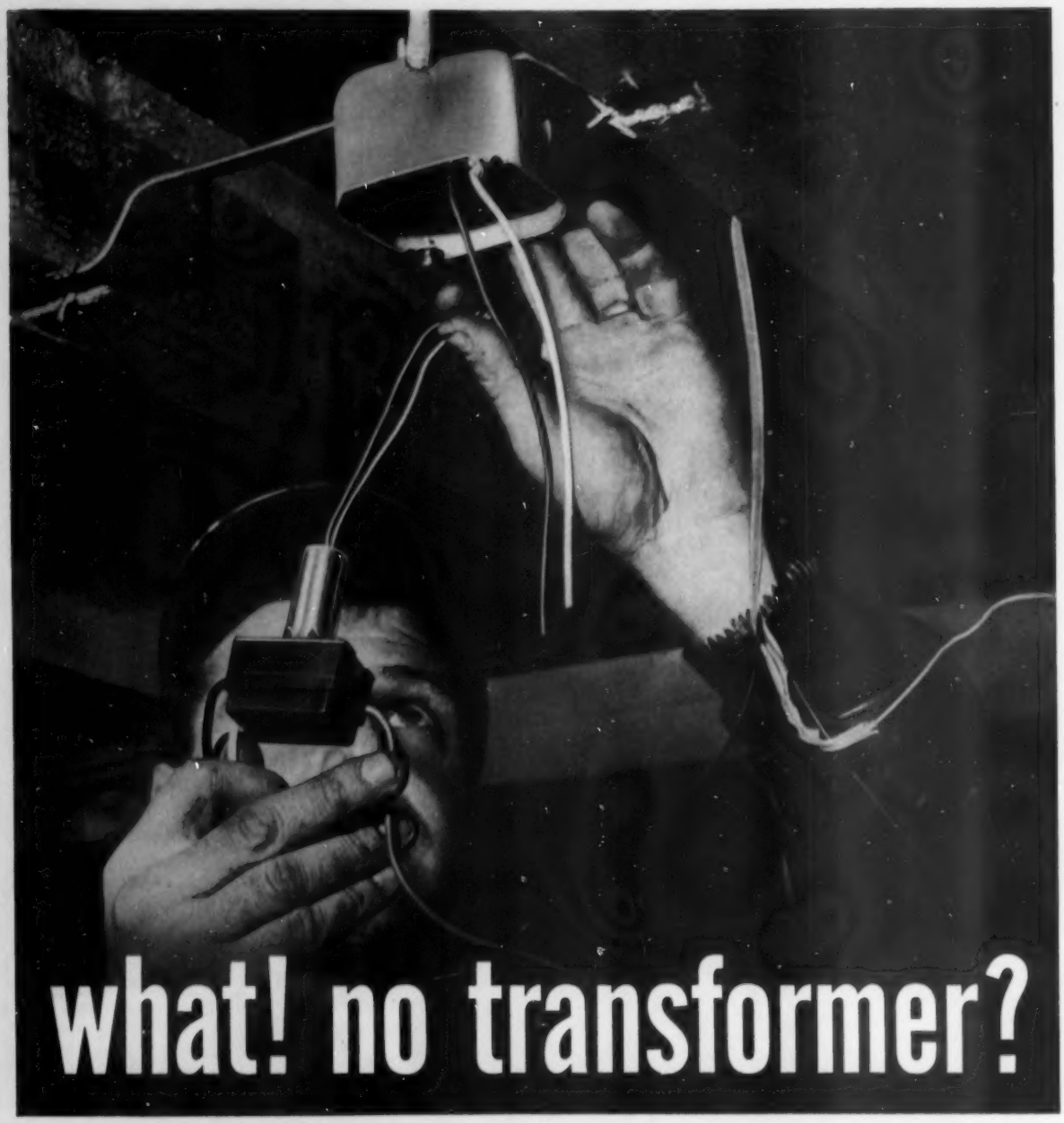

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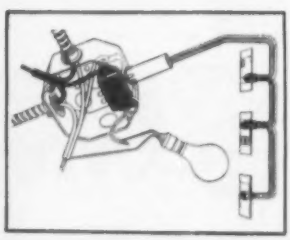

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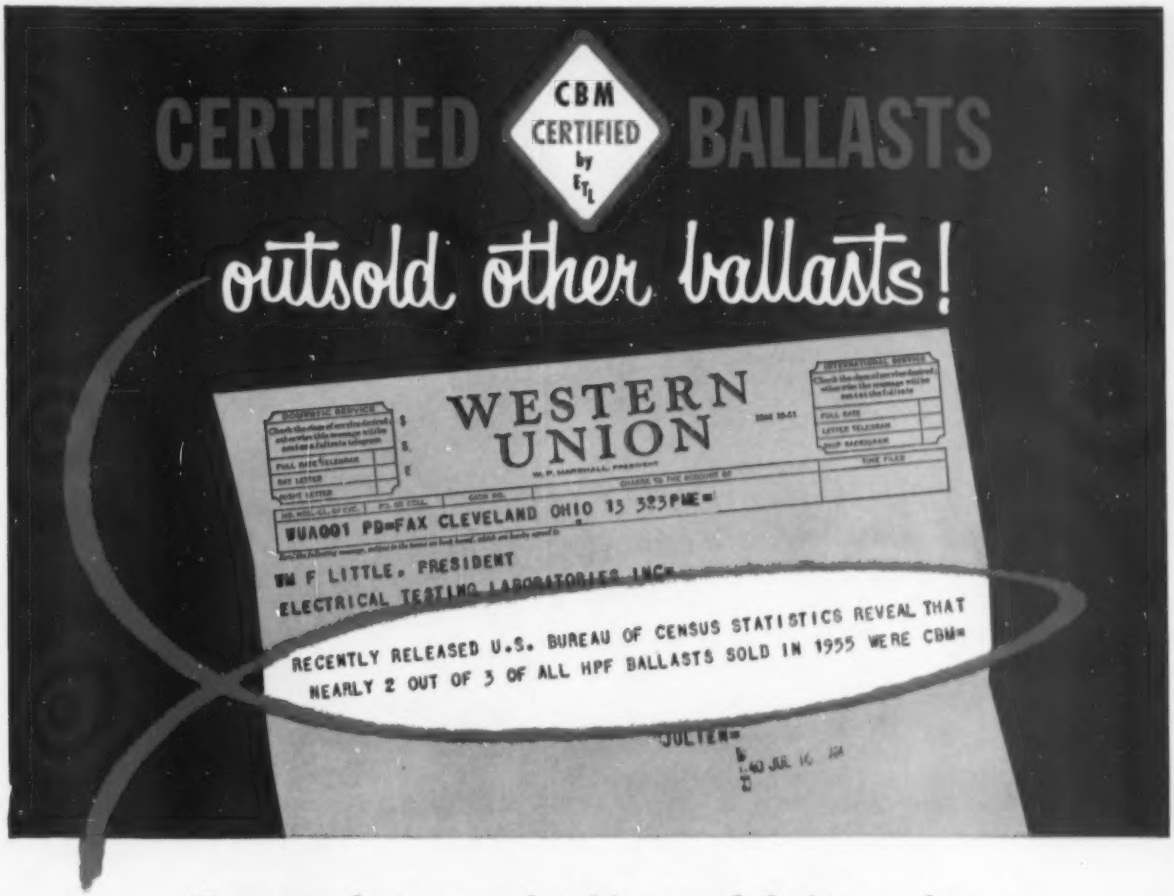
*install* **REMCON** *simplified low-voltage switching devices*

# CERTIFIED CBM CERTIFIED by ETL BALLASTS outsold other ballasts!


WESTERN UNION
WUA001 PD=FAX CLEVELAND OHIO 13 323PME=
W F LITTLE, PRESIDENT
ELECTRICAL TESTING LABORATORIES INC=
RECENTLY RELEASED U.S. BUREAU OF CENSUS STATISTICS REVEAL THAT NEARLY 2 OUT OF 3 OF ALL HPF BALLASTS SOLD IN 1955 WERE CBM=
JULIEN=

*Here are the reasons for this overwhelming preference:*

Experience shows that ballasts delivering improper electrical values to tubes may reduce lamp life by as much as 50% and light output as much as 30% below ratings.

To prevent such losses and to provide every possible safeguard, CERTIFIED CBM BALLASTS are made to exacting specifications that prescribe the correct electrical values to be delivered to the tube.

And to assure conformity to these specifications, Electrical Testing Laboratories, Inc., regularly tests samples of factory production.

That's why nearly 2 out of 3 HPF ballasts* carry the famous CBM emblem.

With CERTIFIED CBM BALLASTS you're assured:

LONG BALLAST LIFE  RATED LAMP LIFE
RATED LIGHT OUTPUT  TROUBLE-FREE OPERATION
FREEDOM FROM NOISE

*Total ballast sales from U. S. Dept. of Commerce. CERTIFIED CBM BALLAST sales from ETL reports.

## CERTIFIED BALLAST MANUFACTURERS

**2116 KEITH BLDG.,**
**CLEVELAND 15, OHIO**

Seven of the country's leading manufacturers of ballasts make CERTIFIED CBM BALLASTS. Participation in CBM is open to any manufacturer who wishes to qualify.

Send for free booklet, "Why It Pays to Use CERTIFIED CBM BALLASTS in Fluorescent Lighting Fixtures".

CERTIFIED BALLAST MANUFACTURERS • 2116 Keith Building • Cleveland 15, Ohio

NAME_____

ADDRESS_____

CITY_____ STATE_____

for permanent connections...
at less cost

use KEARNEY SQUEEZONS

The exclusive "built-in spacer" eliminates the danger of corrosion or galvanic action. Conductors do not touch each other. Each is held around its entire circumference . . . separated by a metallic barrier. You can use versatile SQUEEZONS for copper to copper, copper to aluminum, aluminum to copper or aluminum to aluminum joints.

JAMES R. KEARNEY CORPORATION • 4224-42 Clayton Ave., St. Louis 10, Mo. • *Canadian Plant:* Guelph, Ont.

298

for BETTER CONSTRUCTION
SAFER MAINTENANCE

*Specify* KEARNEY PRODUCTS

JAMES R. KEARNEY

*The Mark of Quality*

# countersign of superior Wires....

Over the counters of leading stores everywhere, the CORNISH spool sells GOOD wires FASTER

**RUBBER . . . NEOPRENE . . . PLASTIC . . . IN COLOR TOO**

*Sold Only Through Wholesalers*

## replacement cord sets

In addition to industrial and heavy duty cord sets, push CORNISH replacement cord sets for home, farm and office—engineered and produced in modern plants that make these types of equipment for America's leading appliance manufacturers. Write for complete catalog of CORNISH electrical products . . .

*Gluttons for Punishment!*

**CORNISH WIRE COMPANY, INC.**
50 Church Street New York 7, N. Y.

Support your local
ADEQUATE WIRING BUREAU
Program . . . .

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# "PERFECTING not PERFECTION is our goal" *

Yesterday's answers are not good enough. Today's will need improving tomorrow.

Take the problem of vibration fatigue. Failure of strand because of vibration or galloping does not occur in mid span. But it becomes a real problem at points of stress concentration, such as the end of the clamp keeper—at mass concentrations, such as at clamps, dampers and rigid splices—or at wearing points at loose attachments or fastenings.

**Yesterday's answer**—PREFORMED ARMOR RODS introduced by Preformed Line Products Company in 1947.

**Today's answer**—PLP PREFORMED ARMOR with pitch direction the same as conductor strand and pitch length less than that of strand (Patent No. 2,609,653). When used in conventional clamps:

- it extends uninterrupted conductor life
- it eliminates wear possibilities
- it prevents excessive mass and stress concentrations.

**Tomorrow's answer** is here today: the armor rod principle carried one step further in Preformed's ARMOR-GRIP SUSPENSION (Patent No. 2,722,393), the entirely new concept in suspension design.

The Armor-Grip Suspension Unit is a "floating suspension"—the conductor is cradled in neoprene and firmly gripped only by the custom-designed Preformed Rods which distribute their pressure over a relatively large area. The result: no wear possibilities—no mass concentrations—*and no clamping stress concentrations.*

This is another example of PLP research laboratories at work. Ever improving methods, materials and solutions is our goal. Call a PLP Representative today and ask for a demonstration.

* *John Dewey, "The Reconstruction of Philosophy"*

*Made in accordance with or for use under one or more of the following U. S. Patents: 2,722,393; 2,275,019; 2,587,521; 2,609,653; 2,691,865; other patents pending.*

PLP

PREFORMED LINE PRODUCTS COMPANY

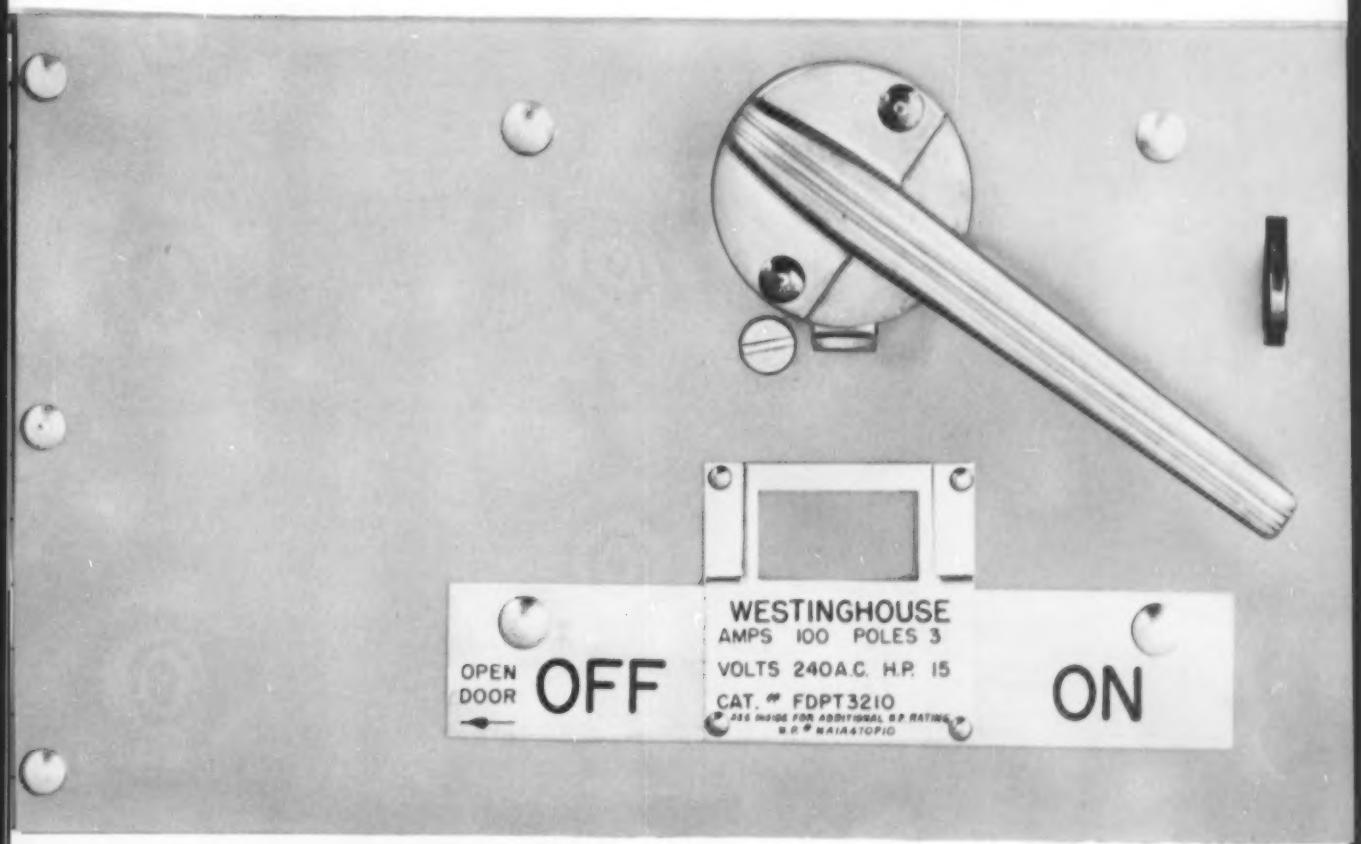
[illegible] ST. CLAIR AVENUE • CLEVELAND 3, OHIO

TELEPHONE: CLEVELAND EXPRESS [illegible]

# NEW from Westinghouse

**Industry's First De-ion® Fusible Distribution Panelboard**

...the *Life-Line FDP*

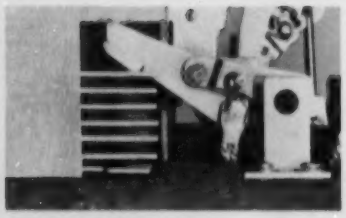


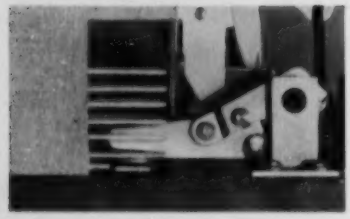

YOU CAN BE **SURE**...IF IT'S Westinghouse

"PERFECTING

# A panelboard equipped to meet your most demanding requirements

*. . . Because It Has a Switching Mechanism That Incorporates . . .*





*Quick-make, quick-break*

You get fast, safe action. The switch in the new Life-Line FDP uses an over-center, spring-operated toggle device with a sturdy crossbar to completely eliminate the possibility of teasing.

*De-ion arc quenchers*

The exclusive Westinghouse principle of arc extinction provides a fast, positive method of breaking hot arcs. De-ion grids confine, divide, and extinguish arcs quickly and safely.

*Visible blades*

Positive indication of whether contacts are in open or closed position. You see the switch blades at a glance—no guesswork.

**The only fusible distribution panelboard that combines these three outstanding advantages...**

*ents: 2,722,393; 2,275,019; 2,587,521; 2,609,653; 2,691,865; other patents pending.*

PLP

PREFORMED LINE PRODUCTS COMPANY

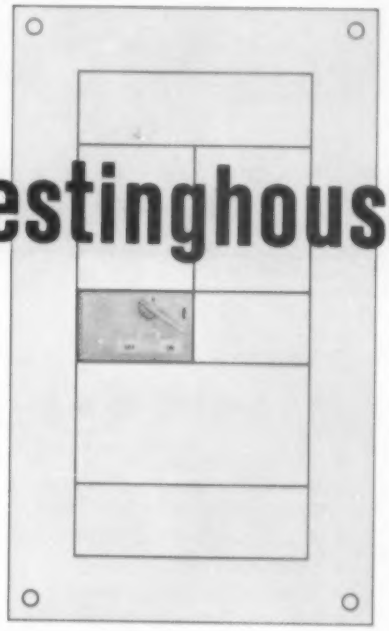
5349 ST. CLAIR AVENUE · CLEVELAND 3, OHIO

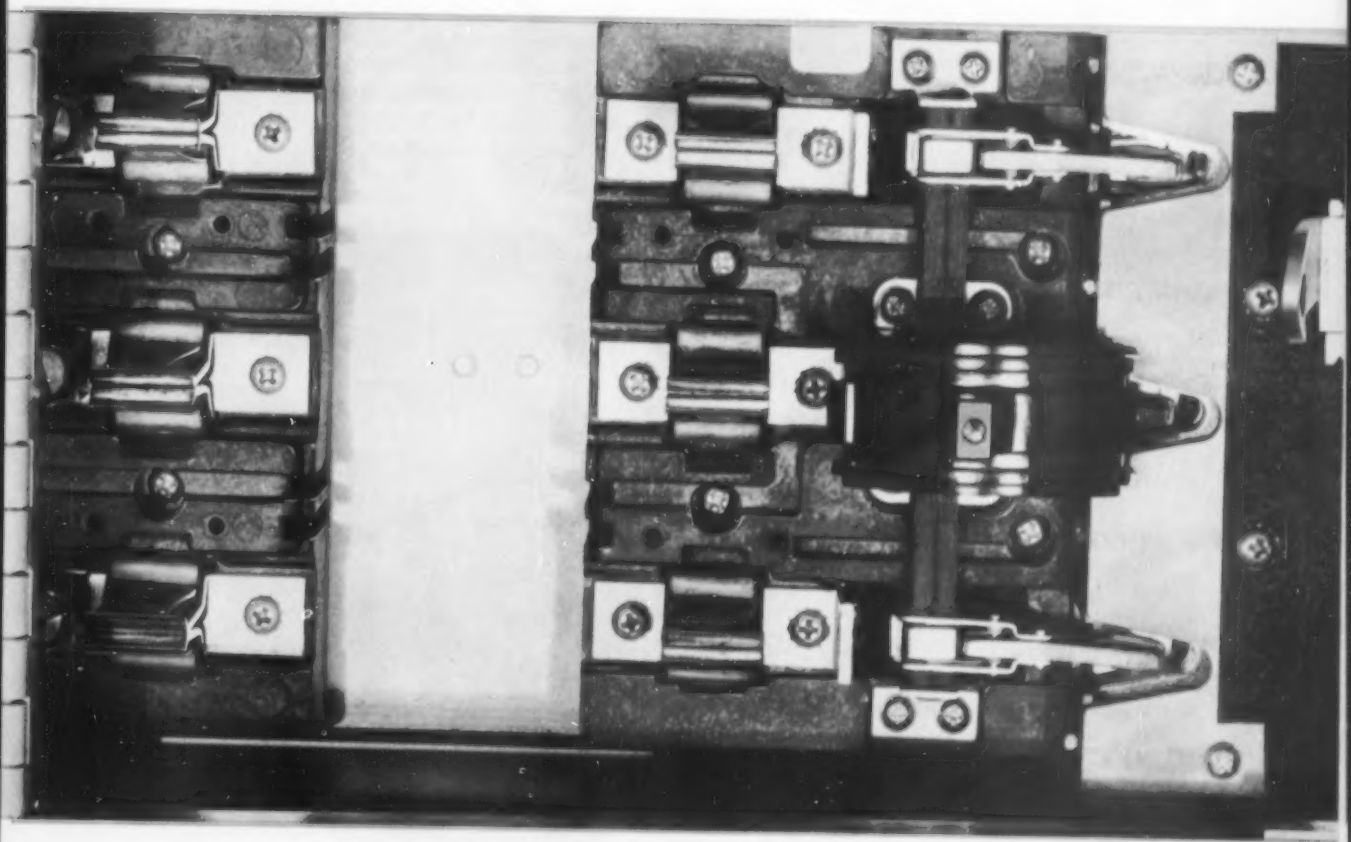
TELEPHONE: CLEVELAND EXPRESS 1-8571

# NEW from Westinghouse

**Industry's First De-ion® Fusible Distribution Panelboard**

...the *Life-Line FDP*





YOU CAN BE **SURE**...IF IT'S Westinghouse

# Check these advantages of the new

# Life-Line FDP PANELBOARD...

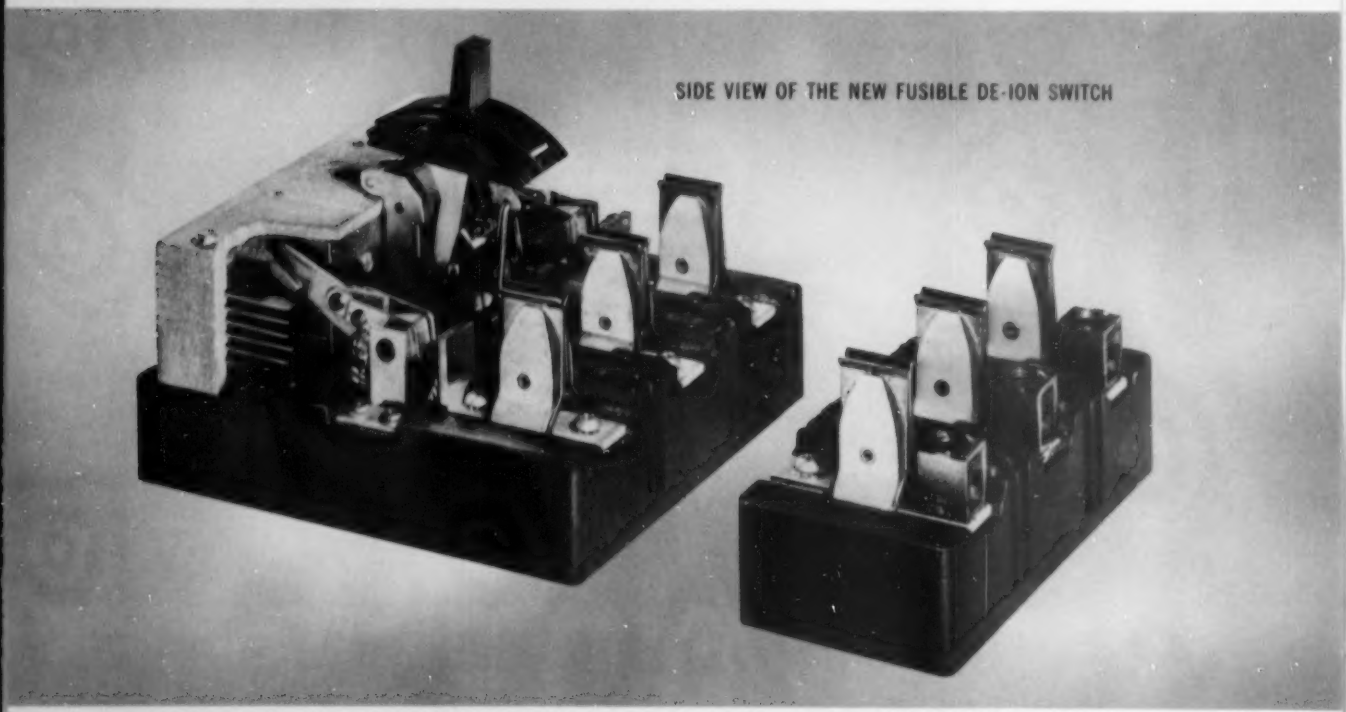
*in the switch . . .*

- Quick-make, quick-break switching mechanism
- Visible blades
- Switching mechanism provided with De-ion principle of arc extinction
- Silver-alloy switching contacts
- Solderless connectors
- Reinforced fuse clips
- Externally operated handle for each switch
- Horsepower rated switches
- Provision for locking switches in "on" or "off" position
- Provision for circuit identification at each switch
- Access door over fuse compartment interlocked for safety

DOUBLE-DOOR UNIT

*in the panelboard . . .*

- Ample wiring and gutter space
- Space for future units can be provided
- Suitable for wall mounting
- Standardized enclosures
- Maximum convertibility
- Extended neutral bar



SIDE VIEW OF THE NEW FUSIBLE DE-ION SWITCH

**YOU CAN BE SURE... IF IT'S Westinghouse**

J-93529

# CATALOGS and BULLETINS

## Available Free to Readers of Electrical South upon Request

**1048—Plug-in Strip**
An illustrated catalog showing the complete "Plug-in" Strip line has recently been published by National Electric Products Corp., Pittsburgh, Pa. This eight-page illustrated brochure pictures the three and six foot standard lengths of the multi-outlet branch circuit assembly.

**1086—Cable Connectors**
Tomic Sales and Engineering Co., 4864 Woodward Ave., Detroit 1, Mich., now have available catalog sheets containing data on the complete line of their connectors, couplings, and cable connectors.

**1088—Fittings and Fixtures**
A 32-page illustrated catalog covering Killark fittings and fixtures is offered by Killark Electric Mfg. Co., Vandeventer and Easton Aves., St. Louis 13, Mo.

**1092—Electrical Boxes**
Steel City Electric Co., 1207 Columbus Ave., Pittsburgh 12, Pa., offers a catalog of their complete line.

**1130—Conduit Fittings**
The latest completely illustrative catalog on their diversified line of conduit fittings is announced by the Atlantic Conduit Fittings Co., 589 Atlantic Ave., Boston 10, Mass.

**1136—Space Heating Guide**
Cavalier Corp., Chattanooga 2, Tenn., has prepared a Guide for Calculations on Electric Space Heating. It is based on study of several thousand installations of electric heat and is a handy reference for calculating electric heating requirements and estimating operating costs. The booklet contains discussion, charts, and floor plan examples.

**1150—Fluorescent Fixtures**
Light & Power Utilities Corp., 1035 Firestone Blvd., Memphis, Tenn., has printed a new catalog of fluorescent lighting fixtures. The new catalog is divided into six sections, each printed in its own distinctive colors. First section is devoted to "General Data" and details to L&P manufacturing.

**1166—Electrical Fittings**
A 40-page illustrated catalog and price list on the Gedney line. Shown and listed are conduit, threaded entrance, SEC, EMT and ground fittings, and box connectors for both armored and non-metallic cables. Copies are available from Gedney Electric Co., RKO Bldg., Radio City, New York 20, N. Y.

**1184—Approved RHW Wire**
Bulletin No. 1018 describing first Underwriters' Approved Type RHW Wire, developed to meet the new National Electrical Code standards, is available from Simplex Wire and Cable Co., 79 Sidney St., Cambridge 39, Mass.

**1190—Electrical Fittings**
Blackhawk Industries, Dubuque, Iowa, offers a complete catalog of electrical conduit and cable fittings. Also, a special publication giving detail drawings and instructions for installing service entrance masts on low or ranch type buildings.

**1192—Wire Pulling Lubricant**
Illustrated six-page folder showing the advantages of an improved Y-Er Eas wire pulling lubricant is available from Electro Compound Co., 3812 150th St., Cleveland 11, Ohio.

**1214—General Catalog**
General catalog of Royal Electric Co., Inc., Pawtucket, R. I., covering flexible service and lamp cords, cord sets, extensions, trouble lights, wiring devices and decorative Christmas lighting is available to wholesalers. Dealer catalogs may be secured from Royal distributors.

**1218—Carbon Products**
A 28-page catalog on Motor and Generator Brushes and carbon products telling how to order brushes grade recommendations characteristics and description of brush grades is available from the Helwig Co., 2536 North 30th St., Milwaukee, Wis.

**1220—Stadium Lighting**
The Pyle-National Co., 1334 N. Kostner Ave., Chicago, Ill., announces the availability of a new eight-page bulletin, No. 605, on stadium lighting, describing in detail floodlighting of a typical outdoor athletic arena stressing the importance of using fully enclosed floodlights.

**1224—Electrical Equipment**
The Wadsworth Electric Mfg. Co., Inc., Covington, Ky., has issued a new catalog Con 15-0 and Bulletin W. C. B. 53-1, containing data on their lines of Safety Switches, Service Equipment, Distribution Panels and "E-Z-RED" Circuit Breakers.

**ELECTRICAL SOUTH**
**806 Peachtree St., NE**
**Atlanta 8, Ga.**

**October, 1956**

**Gentlemen:**

**Please send me the bulletins and catalogs indicated.**
**(Print Plainly)**

**Name** _____ **Title** _____

**Company** _____

**Address** _____

**City & State** _____

**Circle numbers below. Bulletins and catalogs will be mailed promptly.**

| | | | | |
|---|---|---|---|---|
| 1048 | 1086 | 1088 | 1092 | 1130 |
| 1136 | 1150 | 1166 | 1184 | 1190 |
| 1192 | 1214 | 1218 | 1220 | 1224 |
| 1230 | 1238 | 1240 | 1244 | 1248 |
| 1250 | 1254 | 1260 | 1262 | 1264 |
| 1266 | 1268 | 1270 | 1274 | 1276 |
| 1278 | 1280 | 1282 | 1284 | 1288 |
| 1290 | 1292 | | | |



HOLOPHANE Presents Another Vital LIGHTING FIRST

### 1230—Compression Connectors

An illustrated 18-page bulletin (13A) describes Squeezon compression connectors for all overhead distribution connections from line wire to ground rod. Offered by James R. Kearney Corp., 4236 Clayton Ave., St. Louis 10, Mo., the bulletin also describes the mechanical and hydraulic installation tools required and tells where to use each.

### 1238—Selecting Fuses

A 12-page descriptive handbook "Fuseology" tells how to get safest, most dependable, trouble-free electrical protection from fuses, Contains useful information on selecting right size and type of fuses—how to stop needless blows—avoiding poor contact and other troubles. Issued by Bussmann Mfg. Co., University at Jefferson, St. Louis 7, Mo.

### 1240—Lighting Fixtures

Prescolite Manufacturing Corp., 2229 Fourth St., Berkeley 10, Calif., now has available a 20 page color catalog, No. 31-F, describing their complete line of lighting fixtures including recessed series and accessories, surface series and accessories, exit lights, and aisle lights. A typical installation and dimensional drawing are shown for each fixture.

### 1244—New Electrical Fittings Catalog

Concise 36-page catalog illustrates and describes a complete line of electrical fittings, cable racks and wiring specialties. The catalog contains many detail drawings, clear-cut photographic illustrations of mast fittings, cable connectors, straps, hangers and ground clamps in a wide variety of types and sizes. For your free copy, write The M. & W. Electric Mfg. Co., East Palestine, Ohio.

### 1248—Conductor Armor

A new catalog of Superformed Armor Rods, Lineguards, Patch Rods, and Tap Armor describing various uses and applications of these products on overhead conductors is offered by The Fanner Manufacturing Company, Brookside Park, Cleveland 9, Ohio.

### 1250—Electrical Enclosures

Catalog No. 5354 currently being offered to the trade by B & C Metal Stamping Co., 590 Means St., N. W., Atlanta, Ga., is a well-organized, 66-page manual giving complete descriptive information, prices, and specifications on all items in the B & C line of electrical enclosures. Copies are available free of charge to electrical contractors.

### 1254—Construction Anchors

"Anchoring for Power and Communication Linese," a completely illustrated manual on improving line construction with better anchoring, has been published by the Advertising Dept., the A. B. Chance Co., Centralia, Mo. The 25-page booklet shows how to install the right anchor at the right place in the right way.

### 1260—Lampholders

Multi Electric Manufacturing, Inc., -obknowoi
4223-43 W. Lake St., Chicago 24, Ill., has available copies of their Bulletin No. 555, which illustrates and describes the complete line of Multi Sparlites and accessories and fittings for these lampholders. Combination units are included.

### 1262—Fluorescent Fixtures

cently issued by Southern Lighting Manufacturing Co., 501 Elwell St., Orlando, Fla., contains complete diagrams, specifications, and descriptions for all fluorescent fixtures which they manufacture. In addition to the information on commercial, industrial, and school fixtures, the catalog also lists hangers, troffers, troffer accessories, and incandescents which are available from the firm.

### 1264—Thiel Fasteners

Literature is now available on Thiel Easy Drive staples and other fasteners such as Hump Drive "Nail-Its," "Grip Type" 1-hole pipe straps, hangers, etc. Write to Thiel Tool and Engineering Co., 1417 N. Market St., St. Louis 6, Mo.

### 1266—Metal-Clad Switchgear

Detailed information on metal-clad switchgear is now available in two special bulletins, 7004-B and 7004-C. These booklets give descriptions, application data and specifications on units up to 15 kv and 500,000 kva interrupting capacity. Wire I-T-E Circuit Breaker Co., 19th and Hamilton St., Philadelphia 30, Pa.

### 1268—Lighting Fixtures

The Perfeclite Co., 1457 East 40th Street, Cleveland 3, Ohio, makes available the following literature: (1) Data Folder 54-B—4 pages of engineering information, prices and specifications on Plastic Indirect Concentric Ring Luminaires. (2) Data Folder EX-55-A—10 pages of information on Exit Units for all building locations. Complete engineering data and prices given. (3) Data Folder 56-A—information on Ceiling Pan Fixtures and Vapor Proof Prismatic Exterior Fixtures.

### 1270—Aerial Ladders

J. H. Holan Corp., 4100 W. 150th St., Cleveland 11, Ohio, has just published a 4-page catalog on their Series 2200, Mechanical Ladder. They also have a new catalog on their Series 2100 All-Hydraulic Ladder.

### 1274—Space Heaters

A bulletin has been released by Ceilheat, Inc., 5215 Homberg Dr., Knoxville, Tenn., describing their line of wall unit space heaters, with specifications. Ceilheat's three types of radiant cable are also described.

### 1276—Attic Fans

A new four-page, two-color catalog (Bulletin 7514) describing the new Model CA Ventura attic fans for residential "comfort cooling" is now available from American Blower Corp., Detroit 32, Mich.

### 1278—Porcelain Insulators & Hi-Line Hardware

Knox Porcelain Corp., Knoxville 1, Tenn. has recently released catalogs containing complete information on their suspension, pin-type, spool and guy strain insulators as well as Hi-Line hardware and bushings.

### 1280—Electric Heating

Electromode Division of Commercial Controls Corp., 45 Crouch St., Rochester, N. Y., has issued a new catalog listing their complete line of electric heaters, including bathroom, wall-type, portable, baseboard heating, radiant heating panels, various industrial units, and combinations. Also included in Catalog No. 31-K-3 are complete specifications and price list.

### 1282—Exit Lights

A four-page catalog providing illustrations and specifications for their complete line of exit lights has been released by Curtis Lighting Co., 6135 W. 65th St., Chicago 38, Ill. Types of mountings illustrated include recessed, end to wall, ceiling, direct wall, and pendant.

### 1284—Electric Radiant Heating

The design and installation of electric radiant heating is covered comprehensively in two publications just released by General Electric Co., 95 Hathaway St., Providence 7, R. I. Designers of heating systems will find valuable information in a 24-page Electric Radiant Heating Design Manual. A 36-page manual explains and illustrates how to install G-E Electric Radiant Heating in homes.

### 1288—Electric Ventilators

An illustrative 8-page folder, Bulletin 620-L, showing typical installations of a complete line of ventilators for wall, ceiling, laundry, bathroom, kitchen, and small rooms, is available from Trade-Wind Motorfans, Inc., 7755 Paramount Blvd., Rivera, Calif. The folder includes dimensional drawings of installations helpful to building and electrical contractors.

### 1290—Wiring Equipment

Keystone Manufacturing Co., 23328 Sherwood, Center Line, Mich., has issued a new catalog (No. 156) giving complete specifications and illustrations on their line of wiring installation equipment. Included in the 40-page catalog are wireways and fittings, cutout boxes, outlet boxes, switch boxes, and cabinets, giving Code requirements, and price sheet.

### 1292—Conduit Bender

A new bulletin containing operating instructions on several easy methods of bending rigid and thin-wall conduit with the "Chicago" Bender is now available from Gustave Lidseen, Inc., 1000 First St., Hayesville, N. C. Bulletin 556 is illustrated and contains a price and parts list.

# HOLOPHANE Presents Another Vital LIGHTING FIRST

## REALITE*...

*NEW Luminaire Featuring the*
**PRISMALUME*** *Enclosure*

- HIGH EFFICIENCY · LOW BRIGHTNESS
- VISUAL COMFORT · UPWARD LIGHT
- LIGHTWEIGHT · CONTINUOUS RUNS

SPECIAL HINGE CONSTRUCTION permits entire lens section to swing open for easy relamping and servicing.

Product of the foremost engineers, REALITE heralds a new era in fluorescent illumination. Its ultra-thin design integrates harmoniously with all types of modern interiors: classrooms, offices, banks, stores, libraries, corridors — or any area requiring effective, comfortable lighting . . . Equipped with PRISMALUME, the finest prismatic enclosure ever made for fluorescent lamps. Extremely light in weight, shatter-resistant, discoloration-free, this enclosure provides precise control that results in high-level lighting without accompanying glare . . . Send coupon for engineering and installation data.

*FOR BETTER LIGHTING BE SPECIFIC . . .* Holophane

**HOLOPHANE COMPANY, INC.**
*Lighting Authorities Since 1898*
342 Madison Avenue, New York 17, N. Y.
THE HOLOPHANE COMPANY LTD. THE QUEENSWAY, TORONTO, ONTARIO

HOLOPHANE COMPANY, INC.
342 Madison Ave., New York 17, N. Y.

Please send engineering and installation data on your New REALITE luminaire with PRISMALUME enclosure; no obligation to us.

INDIVIDUAL_____

ORGANIZATION_____

STREET_____

CITY_____ ZONE___ STATE_____

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**Electrical Association of Richmond.** C. F. Bennett, Executive Secretary, 205 West Grace St., Richmond 20, Va.

**The Electric League of Charleston.** Guilford C. Smith, Secretary-Treasurer, c/o Appalachian Electric Power Co., P. O. Box 1986, Charleston 27, W. Va.

**Central West Virginia Electrical League, Inc.** J. R. Waters, Secretary, P. O. Box 1392, Fairmont, W. Va.

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**Southeastern Electric Exchange.** John W. Talley, Managing Director, 303 Haas-Howell Bldg., Atlanta, Ga.

**The Maryland Utilities Association.** Robert L. Smith, Secretary, Frederick, Md.

**Oklahoma Utilities Association.** Kate A. Niblack, Secretary, Suite 2416, Oklahoma Biltmore Hotel, Oklahoma City 2, Okla.

**Public Utilities Association of the Virginias.** R. W. McKinnon, Executive Secretary, 5 Franklin Rd., SW, Roanoke 11, Va.

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**Southeastern Electrical Wholesalers Association.** M. L. Tice, Executive Vice-President, P. O. Box 176, Ben Hill, Ga.

**National Association of Electrical Distributors.** Arthur W. Hooper, Executive Director, 290 Madison Ave., New York 17, N. Y.

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**Electrical Manufacturers Representatives Association, Inc.** George E. Clements, Secretary, 722 Stevenson Lane, Towson 4, Md.

**Electrical Manufacturers' Representatives of Virginia, Inc.** C. F. Bennett, Secretary, 205 West Grace St., Richmond 20, Va.

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**Association of Independent Electrical Contractors.** R. E. Neumann, Secretary, 704 Franchman St., New Orleans 16, La.

**Electrical Contractors Association of Maryland.** Charles L. Greer, Secretary-Treasurer, 404 North High St., Baltimore, Md.

**Shelby County Electrical Contractors Assn.** A. M. Scruggs, Sr., Corresponding Secretary, 58 Buntyn St., Memphis 11, Tenn.

**National Electrical Contractors Association.** Clint J. Harder, Secretary-Treasurer, 1200 18th St., NW, Washington 6, D. C.

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**NECA, Gulf Coast Chapter.** Frank M. Hawkins, Manager, 402 St. Michael St., Box 1003, Mobile, Ala.

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**NECA, Arkansas Chapter.** Earl G. Fisk, Manager, 809 N. W. 3rd St., Little Rock, Ark.

**NECA, Washington, D. C. Chapter.** Harry W. Kellams, Manager, 910 17th St., NW, Washington 6, D. C.

**NECA, North Florida Chapter.** W. S. Binckley, Manager, P. O. Box 3172, Jacksonville, Fla.

**NECA, South Florida Chapter.** Charles J. Powers, Manager, 2607 Flagler St., Miami 35, Fla.

**NECA, Atlanta Chapter.** George L. Peterson, Manager, 4234-5 Atlanta National Bldg., 50 Whitehall St., Atlanta, Ga.

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**NECA, South Louisiana Chapter.** Rudolph Viener, Jr., Manager, 831 St. Peter St., New Orleans 16, La.

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**NECA, Maryland Chapter.** Robert L. Higgins, Manager, American National Bldg., Room 305, 204 North Liberty St., Baltimore 1, Md.

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# decorative lighting by Virden

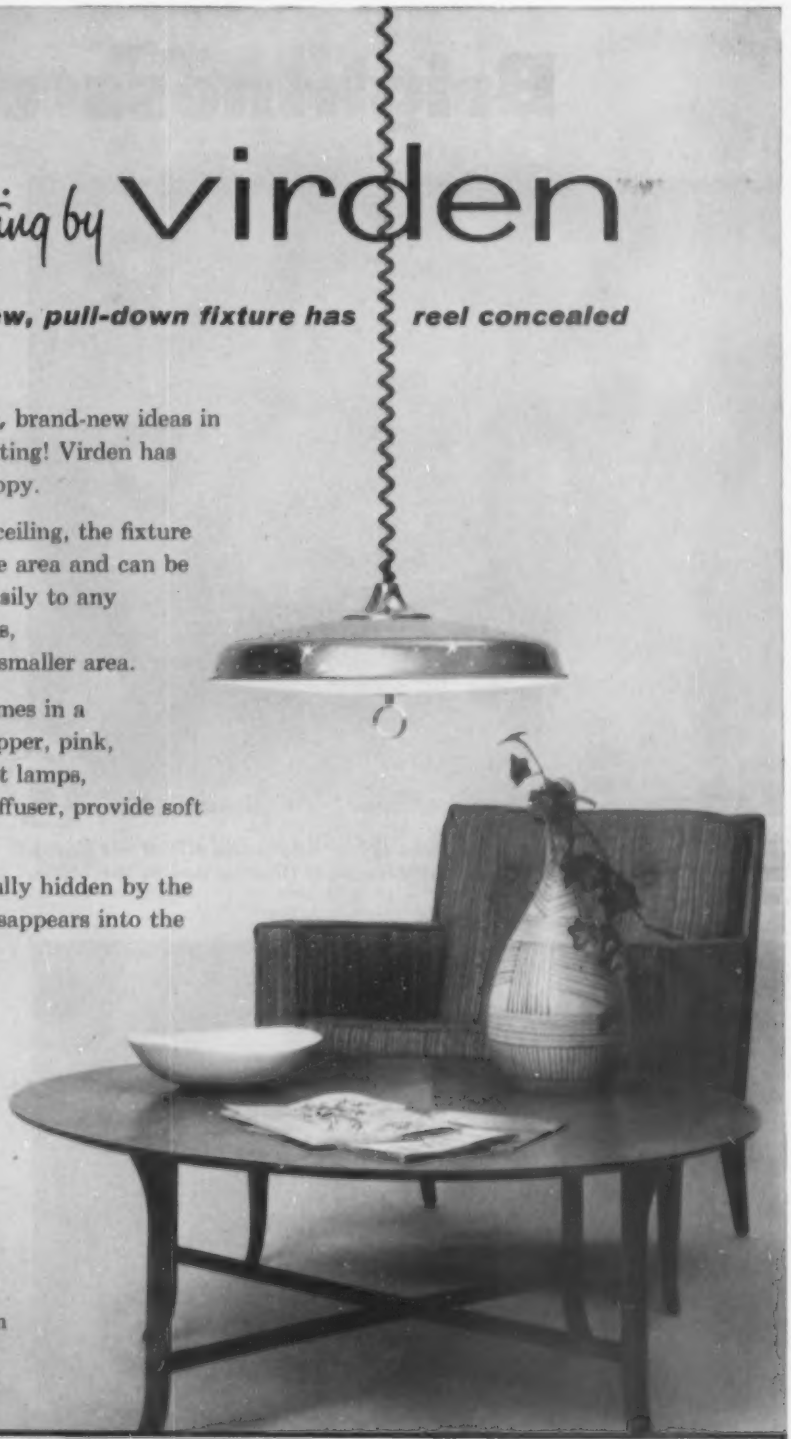
***This smart, new, pull-down fixture has reel concealed***

**Here is one of the brightest,** brand-new ideas in the long history of home lighting! Virden has concealed the reel in the canopy.

Hanging 33 inches from the ceiling, the fixture spreads its beams over a wide area and can be pulled down instantly and easily to any desired length up to 53 inches, concentrating its beams in a smaller area.

Its generous 18-inch hood comes in a variety of finishes—brass, copper, pink, white or black. Three 60-watt lamps, shielded by a frosted glass diffuser, provide soft but efficient illumination.

The thin, strong cable—artfully hidden by the smart, coiled, black cord—disappears into the decorative ceiling canopy as the fixture is raised.



Shown here is but one of the many styles of Virden reel-concealed pull-down fixtures—all designed to blend skillfully with countless varieties of room arrangements and furnishings.

**Write today** for Catalog No. 56, showing in full color all of the popular Virden styles, including the Virden line of pull-down fixtures.

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# Brightness control in

A simple and attractive arrangement of low-brightness effectively lights both the conference tables and the desk tops. Illumination in the office averages over 50 foot-candles.

Recessed 2 ft. by 4 ft. fixtures in this reception room are properly spaced to provide 90 foot-candles. Despite high lighting intensities, room is low in brightness contrasts.

**Sustained seeing tasks as encountered in schools and offices require careful control of brightness. The fundamental rules that form the basis of good design are discussed in this comprehensive article.**

**By George J. Taylor, Eastern Sales Manager, Day-Brite Lighting, Inc., New York, N. Y.***

◆ BRIGHTNESS RATIOS are an important factor in office and school lighting. Lack of consideration of the importance of this factor in years past led to glaring and gloomy conditions which caused eye strain and discomfort when bright luminaires were placed against dark ceilings.

Fortunately progress has been made in getting recognition of this factor and as a result there are many modern lighting installations today that provide good lighting at levels of between 100 and 150 foot-candles. Many private offices use large area luminaires having low brightnesses or over-all ceiling patterns allowing comfortable seeing at between 200 and 300 foot-candles.

Many of our schools' class and study rooms are being given proper consideration with good levels of illumination and proper brightness ratios. Libraries today are seen with large luminous elements of low brightness and with book stacks properly lighted so that titles of books can easily be seen and read.

You can't get too much light if you know what you're doing! How can one know what they should do? What is the answer to good lighting and where may it be found? To start with, the Illuminating Engineering Society provides this information in recommended practices which are available, not only for offices and schools, but factories and many other applications.

Many people seem alarmed when illuminating engineers use the term "brightness ratio." Perhaps it

*Mr. Taylor is vice-president of the Illuminating Engineering Society.

sounds a bit technical, but actually it is not. If anyone wants to take a good look at the meaning of brightness ratios and do it cautiously, they will find how simple it is to understand the meaning of this term.

Some important studies have gone into determining what the proper brightness ratios should be for visual comfort. A simple tabulation of these ratios, as recommended for offices and schools is as follows:

3-to-1 between tasks and adjacent surroundings.

10-to-1 between tasks and more remote surfaces.

20-to-1 between luminaires and surfaces adjacent to them.

40-to-1 anywhere within the environment of the worker.

### The first ratio

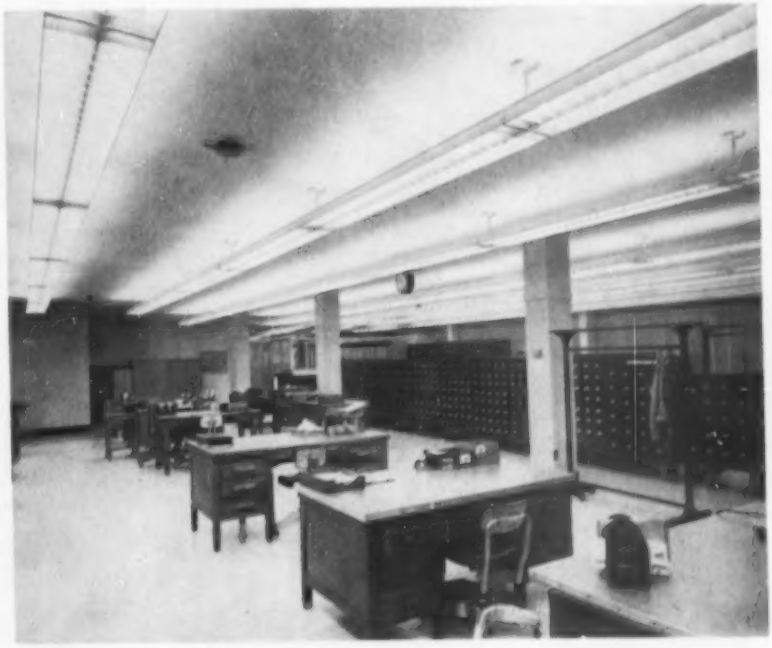
The first simple fundamental of brightness ratios has purely to do with the reflectance or reflection factor of any given material or surface. For instance, a very white bond paper, as customarily used in offices, may have a reflection factor of 80%. If someone must read letters of this paper all day long or at least for long periods of time, it is desirable to have a relatively light desk top. If the desk top has a reflection factor of the order of 30%, then seeing conditions are comfortable.

In this case, the task is the letter being read and the adjacent surroundings is the desk top. Therefore, if we have a paper with a reflection factor of 80% and a desk top of 30%, we divide the first by the second and find that we stay within the recommended value of a brightness ratio of 3 to 1.

Very often offices use tinted colored papers for carbon copies. With such tinted papers, would comfort be improved? The question rises from the fact that tinted papers may have a reflection factor of 60%, and if the desk remains at 30%, then the brightness ratio would be 2 to 1.

The reason comfort or ease of seeing diminishes is because reading carbon copies becomes more difficult. This is due to the fact

**Large office area lighted with troffers equipped with low-brightness controlens. High level illumination is without harsh contrast and over-all job is exceptionally comfortable.**



**Continuous rows of well shielded fixtures, 6-foot on center, provide 120 foot-candles on the desk tops. Note the light colored floors and ceilings and general absence of harsh contrast.**

that the typing on the carbon sheet is not as dark or as black as it is on the bond paper. With a good white bond, or a good white paper, seeing becomes easier when typing has a good black letter or figure. Here high contrast between the typed letter against the paper is important and provides for easier seeing.

In effect, the brightness ratio at the very point of seeing is high and naturally necessary. With lower reflection factors of papers and lighter typed letters, the contrast at the very point of seeing becomes lower and, therefore, more difficult to read. For instance, if a black letter was typed on black paper, visibility would be impossible.

In actual practice we very often find desk tops that have a reflection factor of 8% or even less. It is obvious that where this condition prevails and paper work is done that the brightness ratio would become something around 10 to 1. This ratio is in excess of what the eye can cope with and comfort of seeing is reduced.

### Lighter finishes available

Today many manufacturers of desks, file cabinets, office equipment and operating machinery, make available equipment with light finishes. Such equipment aids materially in benefiting ease of seeing to office workers.

Many offices today are equipped with dark finishes on office equipment. These conditions are easily remedied. For instance, desk tops may be refinished with light linoleums or hard top surfaces or good deck paints. Dark mahogany or oak desks may be bleached and become very attractive. Other desks or file cabinets or similar equipment may be repainted with new paints available on the market.

Such offices will take on an entirely new appearance from a dark, dingy, dull, unattractive, gloomy appearance to one that seems to sparkle with life, light, and a cheerful atmosphere.

Perhaps a note of caution is wise at this point. When doing any refinishing, be sure that high polished surfaces or high glosses are eliminated. Use surfaces or paints that give a matte or dull finish. Never use glass on the top of a desk. It is the worse thing that can be done for working eyes.

The second brightness ratio suggest that 10 to 1 should not be exceeded between tasks and more remote surfaces. A remote surface may be a near-by desk, file cabinet, typewriter, or the floor. Here, a little extra care is necessary in achieving proper brightness ratio for comfort.

The illuminating engineer has two types of foot-candles he measures. One is on the horizontal surface, which may be the desk top, and the other is vertical foot-candles, which may be the drawers in a desk or the sides of a desk which are vertical surfaces. From any type of general lighting system, the horizontal foot-candles always are more than the vertical foot-candles.

No matter what the reflection factor of a surface may be, the more foot-candles you put on that surface the brighter it becomes.

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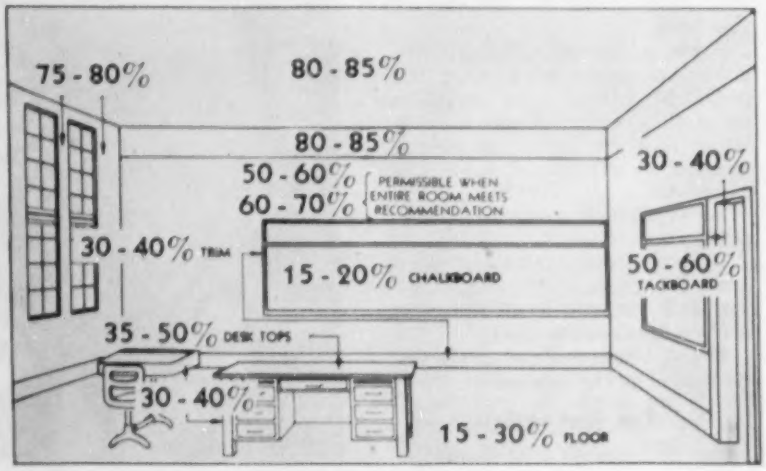


**Brightness control requires that consideration be given to interior surrounds. The pattern of reflectances shown here for a school class room are based on recommendations of the IES.**

**The famous "U" system of classroom lighting utilizes just two rows of fixtures to illuminate desks. Cross-member of "U" highlights teacher's desk and furnishes good vertical lighting on chalkboard.**

# Lighting planned with expansion in mind

**As part of the flexible lighting program for this new building of a Dallas insurance firm, fixtures were aligned in continuous and intermittent continuous rows on six foot centers. These large spaces can be partitioned later without altering the illumination qualities of the divided space. The resulting lighting intensity of this planned system is 70 footcandles maintained.**

**For this spacious new insurance building, lighting was designed and units selected for their adaptability to change.**

◆ IN THE HANDSOME contemporary home office building designed for the United American Insurance Co., of Dallas, Texas, full use is made of expansive window walls set behind overhangs of richly marked limestone, shielding the interiors from direct sunlight. The impressive two-story entrance is flanked on either side by proud standards—the flags of the United States and the Lone Star of Texas

For this spacious new building, special consideration was given in the earliest planning stages to the possibility of expansion and change. Mindful of its own growth, the owners requested that, for the lighting units, a diffusing material be chosen which would give soft, pleasant illumination, yet be of a type which could be readily

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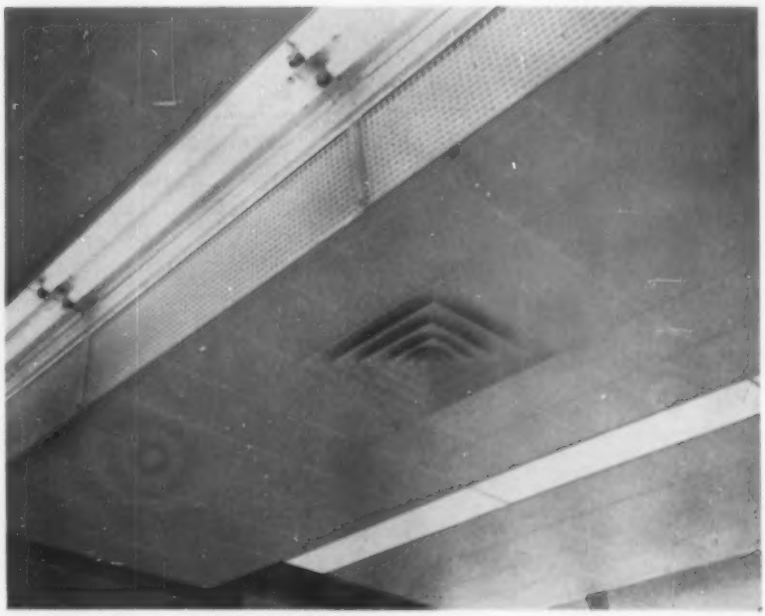


**For greater flexibility, troffers were recessed in a snap-in type T-Bar ceiling system, integrated with heating, air conditioning, and acoustical tile panels of the ceiling itself.**

# Trends in luminous ceiling

**Developments and improvements in luminous ceiling design and materials have been coming at a rapid pace with indications that this type of lighting will increase considerably in popularity. An authority on the subject reports on current trends.**

**By George P. Wakefield, Head, Architectural Development Dept., The Wakefield Co., Vermilion, Ohio**

◆ THREE BASIC REASONS account for the popularity of luminous ceilings. First, they provide means of obtaining shadowless lighting. Illuminating engineers know this characteristic of quality as the same as we have outdoors on an overcast day. Luminous ceilings are at the top of the list of shadow elimination media indoors.

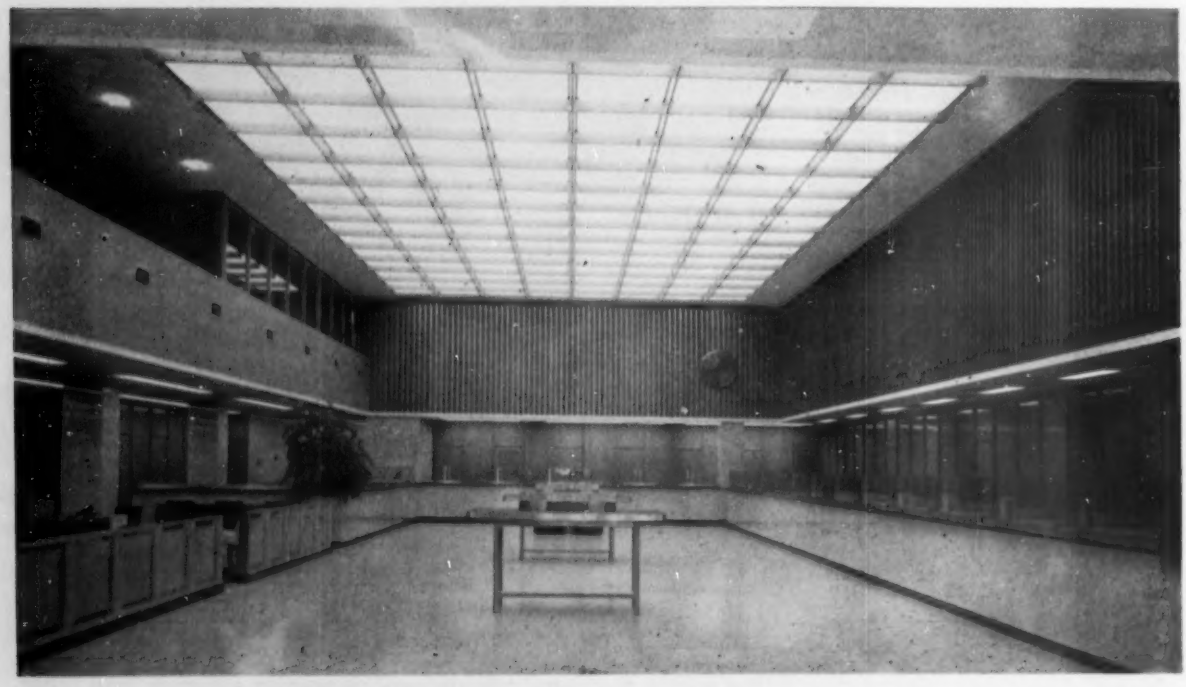
A second reason is inherent with the luminous ceiling. By its very nature a large luminous area has dramatic impact. Add to this contrasts in designs and color and you have another why and wherefore of the luminous ceiling. Take a look outside. What do you see? The over-all sky, cloud designs, and color. The attraction of luminous area seems to be a natural reaction.

This native characteristic of the luminous ceiling could very well be called its Stellar Attraction ("SA"). This effect is multiplied when viewed from outside at night. Many architects realize this potent possibility and are using it to transform mediocre buildings to towers of light.

Apart from the dramatics, in the conversion or modernization of interiors, the luminous ceiling is a ceiling lowering means for transforming a high un-inviting interior to a comfortable, warm space. We can do it with a sheet of plastic hardly thicker than this piece of paper. In modern material saving ideas this is a winner.

### Plenum depths

In modernizing high ceilings, the depth of the plenum is no problem. But in designing new multi-storied buildings the plenum depths become a matter of great concern. Some new developments allow shallower plenums to function with the right degree of brightness distribution on the diffuser or louver. These are the newly announced reflector fluorescent lamps which reflect more light upward and the re-designed electrical channels that allow lamps to be placed nearer to the slab or beam. In quite different ways both of these reduce lamp outlines (bright spots) from below. Higher levels of illumination are also helping to reduce plenum depths as the lamps automatically



**One of the several distinct advantages of the luminous ceiling is the elimination of practically all shadow effect as demonstrated in this banking room installation which features a square grid effect.**

come closer together, thereby reducing the required plenum depths.

Do not underestimate the recent development in shallow fluorescent ballasts from 2⅝ inches to 1¾ inches resulting in almost an inch saving. This is a substantial gain and evidence of the ingenuity of the ballast manufacturers.

Interference of plenum space with air ducts, beams, etc., is a design problem. The solution requires conscientious engineering with forethought and can well be completed on paper. There is no substitute for the best in co-ordination at this phase. Complete drawings facilitate the work of all trades in the plenum area and pay handsome dividends in labor savings.

### Electrical channels

New concepts in electrical channels, a compromise between the strip system and ladder arrangements, form a ready wired unit with one channel and two lamps. This provides lamps spaced on pre-set dimensions of 12-inch to 18-inch centers rather than 3 inches as on conventional strip and provide a complete unit ready to hang, as against the assembly required for ladder types.

As usual, no one type seems to outmode all others. Generally, the trend has been to slimline lamp systems with their stronger and more tolerable lampholders.

Advanced grids are coming along aimed at standardization and simplicity providing maximum field flexibility. Such components will allow the stocking of a few basic parts with which, as with the old mechano set, the architect, engineer, and contractor may build the ceiling of their dreams. This is not for do-it-yourselfers, though it is almost within their limitations.

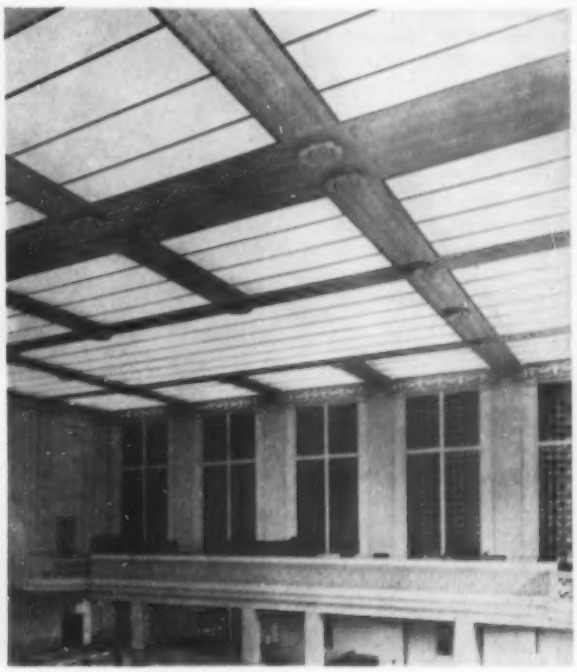
Easy-to-cut-and-handle aluminum extrusions are showing up in tees and wall angles, contributing to cleaner and quicker grid work. This is a boon because perimeter and column variations are here to stay.

The final appearance of the installation is the crux of the luminous ceiling. Spotty, shoddy, cracked, scratched ceilings are not going to go very far. They have to meet the regular standards of interior trim to survive.

### Diffusers

Aside from the grid work the diffuser plays the most important part in the luminous ceiling. In fact to the viewer, the diffuser is it! The diffuser is the broad term for a diffusing panel or louver, or a combination of each. A diffuser may also be a refractor so it is perhaps best to call them all diffusers.

Diffusers of the solid panel type are being made of a variety of designs ranging from intricate vacuum formed designs to extruded



**Another outstanding advantage of the luminous ceiling is its clean cut appearance. These before and after views of another bank interior emphasize this advantage particularly. Ceiling height unchanged.**

sections, with interlocking edges Newer designs are appearing with fresh and appealing motif. Sizes run from 2 ft. x 2 ft. to 4 ft. x 4 ft. with the 2 ft. x 4 ft. size the most popular for its handibility and rectangularity.

Intricate brightness control prisms are appearing in glass and plastics which pacify those critical of area brightness. Plastics of tougher material with greater color stability are being developed. Thicknesses run from .007 inch to .125 inch depending upon shape, use, and material. The thins are generally pre-formed for added strength and are pre-rolled for shipping and handling. The economy of the reduced material in the thin embossed shapes is gaining acceptance due to the simple fact that you cannot tell the difference between the two from the floor.

But, as with the channels, we certainly are going to have all kinds of diffusers—it merely depends on what the customer needs or wants.

Louvers of injection plastic are coming in greater number. This technique provides a fine luminous louver at reasonable cost. The bugaboo of cleaning has turned out to be a straw man against the advantageous features of the louver.

Metal louvers of aluminum foil and thin steel are appearing. The egg-crate louver is being modified and improved. Hexagonal cells are better versions both in foil and thicks. The accent is on improved appearance and lower costs in metal louvers. Higher levels of illumination create the need for interesting combinations of the panel diffuser and the louver which give birth to hybrids with excellent brightness control features.

Since the diffuser is the most apparent part of the luminous ceiling, it is not difficult to foresee a constant stream of research directed at this component by an alert lighting industry and aggressive plastic manufacturers.

### Acoustical advances

Since the control of noise plays an important part in modern commercial interiors, this control is a factor of much importance. Provisions for acoustical control must be designed within the room and not sacrificed at the alter of lighting. We must not disregard any factor in our environmental sur-

*(Continued on page 136)*

**The exterior night-time attraction value of the luminous ceiling is very effective in contrast to the low outdoor brightnesses.**

**The advent of the "standard packaged" luminous ceiling makes this type of lighting especially feasible for modernization programs.**

# Mississippi trend indicates quality lighting increase

**By H. S. Thomas, Division Sales Manager, Mississippi Power & Light Co., Jackson, Miss.**

◆ ACTIVITIES in lighting modernization in Mississippi have gone forward at a continued rapid pace in stores, schools, offices, and home. Also, there has been a marked trend in the increased use of exterior lighting around public buildings, shopping centers, doctor clinics, churches and schools. The acceptance of higher illumination level and better quality has been more marked in offices and homes. Good pilot lighting installations during the past few years have influenced other offices to incorporate good lighting in their modernization plans.

Improved home lighting, especially in the Jackson area, has been brought about to a large extent by the Home Lighting Advisors whose activities consist of working with architects, builders

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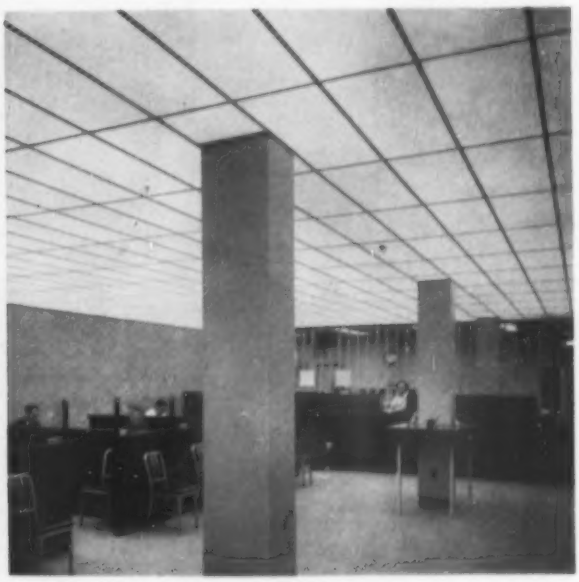
**Section of a den lighted by means of channel lighting concealed behind a cornice that is part of the structure. General overhead light is shielded recessed fixtures using controlled dimmer circuit.**



**At left, this store lighting installation in Jackson, Miss., consists of shielded recessed troffers producing general illumination of 60 footcandles. Accent lighting is also employed. At right, this bank lighting installation contains Guth Grate-Lite ceiling, producing uniform illumination of 80 footcandles.**

Early postwar shoe store lighting, left, with bare fluorescent lamps as compared with 1956 shoe store lighting, right, featuring luminous ceiling and top-hat downlights to utilize full sales power of light.

# New lighting sources

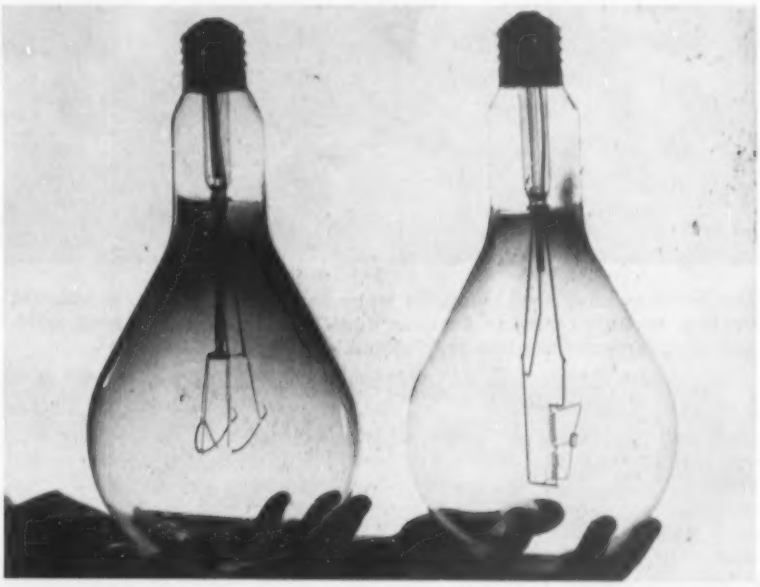
There are 50 footcandles of color improved light in this frame and stamping plant, with mercury and filament lamps used in a combination system. H1000-watt C15 mercury lamps and 750-watt R52 lamps comprise the sources, the latter assuring emergency lighting.

**The past few months have been unusually productive of new higher efficiency light sources. Here, a G-E engineer discusses the company's recent important lighting developments.**

**By J. L. Tugman, Application Engineer, Lamp Division of General Electric Co., Nela Park, Cleveland, Ohio.**

◆ THE SCIENCE, art and business of lighting has to keep moving pretty fast to match the rapid advance in many other sectors of our dynamic society. Let us consider first the science element. It must be better informed about the complete (psychosomatic) needs of human beings who will put better lighting to work, more effectively, we hope. Science must also draw new principles from the laboratories which can give us new higher efficiency light sources and techniques of application. Besides quantitative considerations, there are qualitative ones, which bring up matters like brightness distribu-

**Early postwar department store lighting, left, with bare fluorescent lamps. At right, 1956 department store lighting with its clean open design featuring recessed incandescents and adjustable spotlights.**



**At top right, a comparison in bulb blackening near end of bulb life. Left, lamp with older type filament, and right, G-E's new stand-up filament with axial position permitting hotter burning without shorter lamp life. At bottom, meter reading shows new G-E Power Groove produces twice the light of existing fluorescents with no loss of efficiency, and five times as much light per foot as original fluorescent lamp.**

tion and color. That takes us into the second element, art.

It takes art in applications, as well as sound engineering, to deliver the developments of the laboratories agreeably to the expectations of a public long conditioned to new wonders. With more thoughtful consideration of taste, new products and new ideas create new markets, and win and hold approval. While the public is much more consumption minded than it used to be, it has also been led to expect greater satisfaction in appearance, particularly as better lamps and lighting techniques strive to meet the demand for something more than mechanical finesse.

Then, somehow, the business of lighting must discover how to put the work of scientists and artists into the hands of consumers so that price attraction keeps the volume of purchases moving along with the total "progress" market. This latter job has to be handled by experts pretty much alert to their own science and art of marketing if it is to succeed. In fulfilling the promise of the creative process it

**The new line of colored lamps for home and decorative use, announced by G-E recently, come in popular household sizes. Blue, green, gold, and pink comprise the line of "Coloramic" lamps.**

cultivates, the lighting business must bring a number of people into effective cooperation . . . . architects, dealers, decorators, etc. The job is being done with substantial success, although the margin short of complete success reminds us not to stop to congratulate ourselves. Substandard lighting is far too prevalent to assume that the many examples of advanced practice represent average market opportunities.

The past twelve months have been unusually productive of new higher efficiency light sources. This remarkable record of product development probably inspired one business magazine recently to anticipate early realization of completely new product forms, like electroluminescence. (Let's take time to learn to spell it and pronounce it.) Before we turn our attention to the amazing possibilities farther ahead we ought to get a stronger grasp of what is available right now. If only ten per cent of the underlighted space in the nation took advantage of the brand new lighting developments of the past year, prosperity would take a visible leap forward.

### Stand-up filament

Late last fall General Electric announced "the greatest single improvement in incandescent light bulb performance in 42 years." Specifically, this referred to the development of the new stand-up filament which increases light output from six to fifteen per cent in various types of lamps. From this development was derived the "Bonus line" of lamps, estimated to add a $100,000,000 annual value in light delivered.

This is one way of putting the more-for-your-money story implicit in the new filament construction. The real advantage requires further interpretation for the consumer who may not understand the technical basis for it. Those who counsel the consumer should know that the standup filament increases light output in two ways. First, the axial position of the filament permits hotter burning without shorter lamp life. The new construction also reduces losses of light from bulb blackening deposits from the burned filament.

It is appreciation of these features which permits the improved economies of these lamps to prevail in actual use. Otherwise, careless application can dissipate their extra efficiency through neglect. In the context of such a long-term project as the industry envisions in the "Live Better Electrically" program, higher output lamps are an indispensable feature. That program contemplates a vast up-grading of our enjoyments of science and art in new electrical products. Business sees a way of offering associated conveniences (for instance all season weather conditioning and a vast array of appliances) and by combining the efficiencies of all of them, making us more effective consumers. We learn at home and at work a new relish in adapting to comfortable environments that well-balanced electrical appointments make possible. Eye appeal in our interiors relies on good lighting to confirm all our satisfactions.

### Industrial lighting

What is true for the home goes for all phases of business activity as well. Higher output lamps simplify the problems of increasing plant productivity. By and large higher investment per worker in industry and commerce has eliminated an immense amount of drudgery. While there is much left to do, there is a new pattern emerging. The creative urge in management aims at transforming monotonous tasks into larger opportunities for skill. Lighting the tasks of skilled workers implies a greater responsibility in prescribing levels of illumination. Higher efficiency lamps, quite as much as advanced machines, are among the tools that must be coordinated to achieve the overall result.

In merchandising, the idea that better lighting, as part of better store design, makes us more effective customers and consumers is well advanced. Stores give daily proof that shopping has become one of the great, popular fields of recreation. Well displayed (which means well lighted) merchandise sells itself.

Along with the announcement of axial filament lamps attention was drawn to a number of other recently developed sources. New

*(Continued on page 132)*

**An astronomic time switch (mechanical) controls the signs and canopy lighting on the new Montgomery Hardware, Jackson, Miss. Interior shows the complete lighting installation by Watts Electric, Jackson.**

# Lighting a hardware store

◆ ONE OF THE most satisfactory electrical installations performed recently by Watts Electric Company, Jackson, Miss., was the wiring and ceiling fixture installation in the new Montgomery Hardware on Jackson's North side.

Not large in point of sale or profit, nevertheless, it was the type of job which furnished a considerable amount of satisfaction to the contractor. It was the first installation of this type of steel-acoustic, drop ceiling; in combination with shallow surface luminaires, and "Swivelette" stem fixtures. (And who doesn't like to chalk up a first?) The completed job was a marvel of beauty and utility that any contractor could take pride in having performed, and has garnered some valuable word-of-mouth publicity among architects and engineers.

The entire light-conditioning scheme was designed by Leigh Watkins, III, Jackson electrical engineer, to eliminate shadows and to provide a footcandle reading of 30 in the new hardware supermart.

*(Continued on page 134)*

**Interior view of the new hardware store shows new type acoustic steel drop ceiling and lighting fixtures. Continuous fluorescent tubes light the wall displays to advantage.**

As part of the Miami motel lighting for attraction program, the frontal white wall of the Colonial Inn becomes blazingly alive at night through the use of shielded spotlights on each side of the tall columns at both ground and second floor levels. Recessed spots in the eaves are of higher intensity. At bottom, another example of combining lighting with architecture is the Dunes Motel whose large sign facade features an Egyptian chariot and driver illuminated by spotlights and golden plastic neon letters.

# Lighting for attraction

**The tremendous growth of Miami motels has created keen competition for customer attention, with the result that lighting for attraction has become an outstanding factor in motel design and planning.**

**By Frank Yanaros, Commercial Engineer, Florida Power and Light Co., Miami, Fla.**

◆ "LET'S STOP at this motel with the pretty, lighted waterfall." Such a choice may be made from one of the most unusual series of exterior lighting installations to be found anywhere by the after-dark traveler, or one seeking a different place to stay along the fabulous "Golden Strip" of beach-front motels on Highway AIA just north of Miami Beach. For here, along what was just 5 years ago a 2½-mile bare strip of land swept by pleasant Gulf Stream breezes, has sprung up a row of 64 modern motels offering over 5,000 units for a vacationer's enjoyment.

The tremendous popularity of the Miami area as a vacation-land has resulted in constantly-increasing numbers of visitors who want to be comfortably housed yet prefer less formality than that generally found in a hotel. Now, thousands of visitors annually take advantage of the relaxed, informal living offered by the motels.

Few places are designed, lighting-wise, as is this strip which recognizes that lighting for attraction is essential in a highly competitive area. For this reason the motel fronts are planned to capture the attention of the motorist both by day and by night. Actually in many cases the motel is more attractive by night because of the contrast between light and darkness and the use of light to emphasize structural details and distinctive display features such as waterfalls, mounted driftwood pieces, and many others.

Many of the motels have selected some distinctive theme to highlight so as to catch the eye of the passing motorist. For example the Sahara Motel displays a large well lighted camel caravan on the front lawn, in keeping with its desert motif in design. The materials used in construction and general architecture all blend with the theme set by the name of the motel.

As one approaches the "Golden Strip," known more officially as the Sunny Isles Motel Area, he sees a long row of lighted-front buildings having everything from PAR-38 spots to neon tubing. Although the area has no street lights, nevertheless, there is considerable light on the pavement.

### Psychological effect

Actually this trend in lighting for attraction has a dual role, one of which is to encourage visitors to stop there for a vacation. In addition, most of the motels have their own bar-lounge and entertainment for guests. Since there are many people seeking entertainment in this vacation area, a warm, friendly atmosphere created by attractive decor and good lighting invites them into the motel for entertainment. According to Hal Bergida, executive secretary of the

*(Continued on page 134)*

**The main lobby of the Dunes Motel, plainly visible from the street for attraction, achieves general lighting through use of neon cove lighting which creates spaciousness, recessed spotlights in the ceiling, and large table lamps. The huge copper sunburst ceiling fixture has over 400 small spired Dutch lamps of medium intensity.**

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President of Phillips
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Largest Homebuilders, Orlando.

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# Modernizing by relighting

**The front entrance to lobby and office of receptionist, Chamber of Commerce Building, Valdosta, Georgia. This area is lighted with Guth troffers with Grate Lite. Lightolier Gold reflector down lights over the counter, and Framburg direct-indirect fixtures in the lobby. The entire building was relighted.**

**The corridor is lighted with Guth two-in-one brackets with GrateLite. Framburg units light walls where pictures will be displayed.**

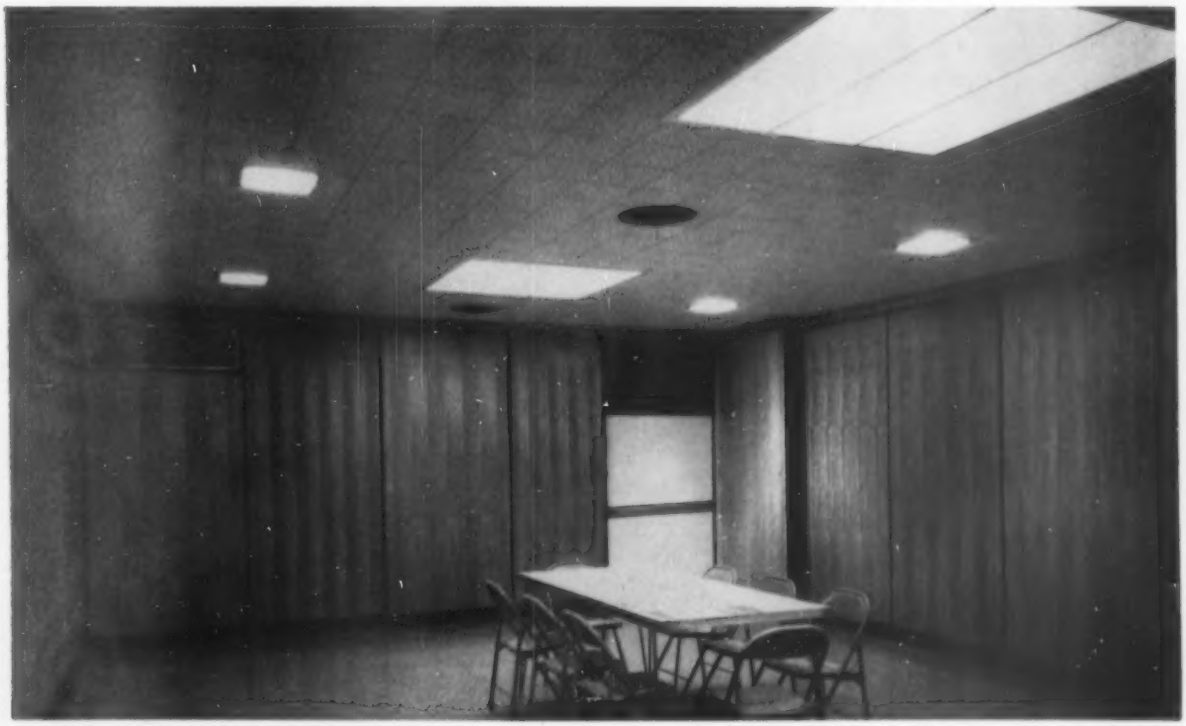
◆ AN OUTSTANDING lighting installation was recently completed for the Chamber of Commerce in Valdosta, Ga. In order to keep pace with local merchants who had modernized their stores to make them more attractive to customers, the Chamber of Commerce decided to remodel their building to make the first contact of persons coming into the area a pleasant experience, reports William H. Sadler, commercial sales engineer, Georgia Power & Light Co. (Mr. Sadler is now with Florida Power Corp.)

The remodeling and relighting was accomplished with the assistance of Joe Bright, architect.

An interesting feature of the lighting installation is the variety of fixtures used. The reception area includes recessed fluorescent troffers over the desks, recessed incandescent down lights over counter areas, and an ornamental

*(Continued on page 133)*

The modern designed office of Moffett Kendrick, manager of the Valdosta Chamber of Commerce, is lighted to 100 foot-candles with Guth GrateLite ceiling covering nearly all of the ceiling area.



The conference room is lighted with two 4'x4' Guth units utilizing GrateLite and six 40-watt lamps, and six Art Metal 300-watt units. A five-ton heat pump for air conditioning the building is recessed in the wall and concealed by a panel door matching the wall paneling of the room.

# Now, a luminaire that operates in freezing temperatures!

The new Westinghouse LT operates in low or variable temperatures—making it ideal for lighting cold storage warehouses, food lockers, shipping platforms and marquees.

Designed in cooperation with the Refrigeration Institute, the Westinghouse LT luminaire gives low heat output and high light output. A clear, ribbed plastic enclosure protects the lamp from air currents to insure maximum efficiency of the F72T-12, 100-watt, rapid-start lamps. In addition, the LT's porcelain finish resists corrosion in moist atmospheres and enhances its appearance. Why gamble with fixtures that were designed for other purposes.

Doesn't the LT suggest an application to you?

For real lighting quality, specify the Westinghouse LT luminaire.

See your Westinghouse distributor or write, Westinghouse Electric Corp., Lighting Div., Edgewater Park, Cleveland, Ohio.

Look for other new Westinghouse lighting products . . . soon to be announced!

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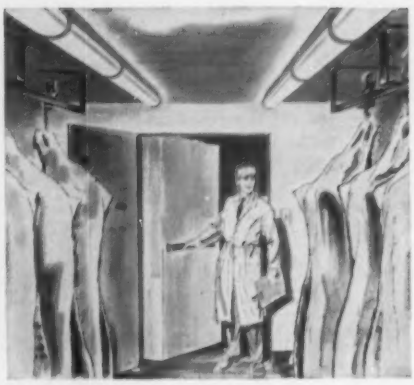
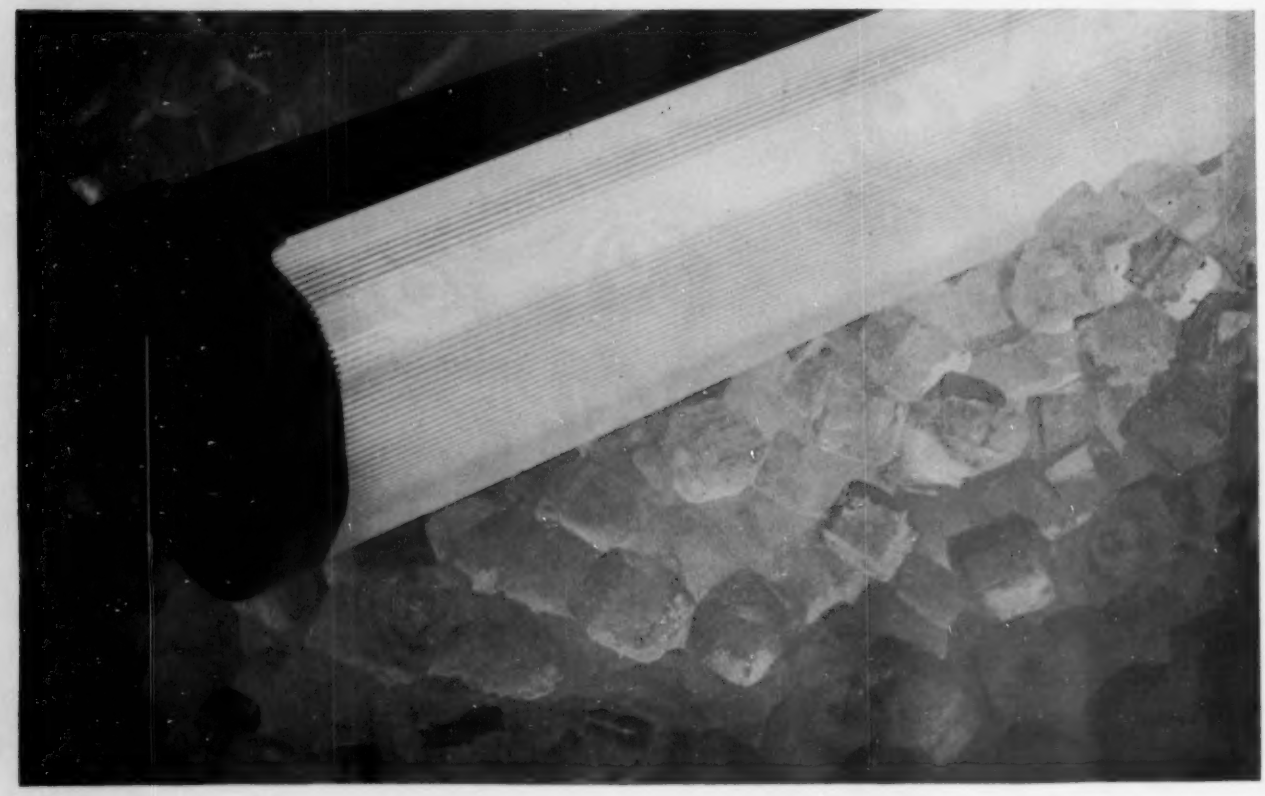


**WATCH WESTINGHOUSE** COVER THE PRESIDENTIAL CAMPAIGN ON CBS TELEVISION AND RADIO!



# Demand for quality lighting increases

**The demand for high quality lighting is evidenced in most of the current construction projects in the New Orleans Public Service area. The company considers its program of close cooperation with all segments of the lighting industry the key to this demand.**

**By R. R. Rotharmel, New Orleans Public Service, Inc., New Orleans, La.**

◆ SINCE THE END of hostilities 11 years ago, New Orleans has been experiencing a continuous, large scale residential, industrial and commercial construction development. However, commercial construction appears to be reaching an unprecedented level at the present time, and it is gratifying to observe that the demand for high quality lighting is quite evident in most of these present day construction projects.

Local and state government agencies now have under construction a long awaited Civic Center. This Center, located in the city's business district, encompasses an area of over seven square blocks. All of the buildings planned for the Center have quality lighting included in their design. Of particular interest is the new public library which will have an outstanding luminous ceiling lighting system.

The city government is also in the process of installing mercury vapor street lighting on the major thoroughfares. Over 3,600 of these luminaires have been installed, of which more than two-thirds have color corrected lamps.

At present there are four major office buildings under construction and others are in the planning stage. These buildings also are designed with modern, quality lighting.

The expansion of residential construction in outlying sections of the city has been a major factor in the development of the popular shopping centers in these areas. Of particular interest at this time is a gigantic shopping center now under construction. A supermarket will occupy most of the 188,000 square foot, first floor area. The store interior will be illuminated to an intensity of 70 foot-candles by approximately 1,000 kw in fluorescent luminaires.

Residential construction has also brought about an ever expanding program of school construction. Both parochial and public school systems are actively engaged in new construction and renovation of existing facilities. It is pleasing to note that the great majority of these schools have lighting designed in conformance with the American Standard Practice for School Lighting. This is due to the efforts of the designing architects and engineers as well as all segments of the lighting industry.

Renovation of many of the offices and stores in New Orleans' business district is also progressing at an increasing rate. This is featured by the increased desire for adequate lighting. Within the past few years two of the major department stores have embarked on remodeling programs. In each case the main floors were relighted with large area fluorescent luminaires.

It is well established now that the demand for high level, quality illumination is growing in most new construction and remodeling projects. The city is getting more installations of large area fluorescent luminaires, troffers, and luminous ceilings. Incandescent spots and floods are being used in quantity for "high lighting" in conjunction with general fluorescent illumination. In just a few

*(Continued on page 52)*

**As part of the remodeling program for this New Orleans department store, the main floor was relighted with large area fluorescent 4 ft. by 4 ft., luminaires with eight deluxe warm white lamps per fixture. The lighting intensity is 50 footcandles.**

**Store and office renovation in New Orleans is progressing rapidly. At top, this auto display room lighting consists of an area of 4500 sq. ft. of luminous ceiling using 16 - 72" lamps and 149 - 96" lamps, and 18 - 150w floods to highlight display. Intensity is 70 ft-c. At bottom, this office lighting consists of continuous rows of 40w fluorescent strips above louverall ceiling. Intensity is 60 ft-c.**

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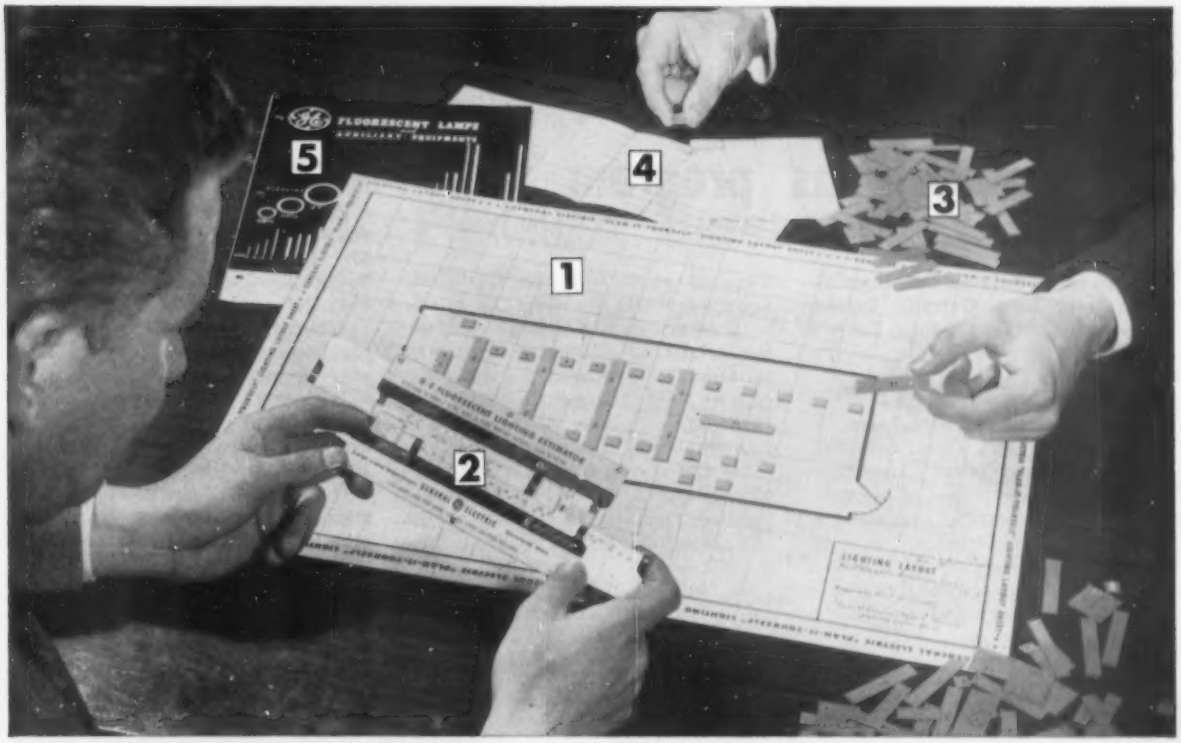


Your General Electric "Plan-It-Yourself" Lighting Layout Kit contains (1) layout sheets, (2) a fluorescent lighting estimator, (3) movable, scaled "fixtures", (4) gummed "fixtures" for your permanent layout, and (5) a lighting design guide.

**Send for your new G-E "Plan-It-Yourself" Lighting Layout Kit today. It will help your lighting prospects sell themselves.**

The G-E "Plan-It-Yourself" Lighting Layout Kit is a brand new idea that makes your selling more profitable because:

**1. It makes your selling easier.** Your prospect helps sell himself because he is in on the planning. He can visualize his lighting needs more easily.

**2. You can "sell up".** Because your prospect sees *why* the new layout fits his needs, you can sell him a better lighting job. *You make more profit!*

**3. You'll "close" more sales.** Once the layout is complete, your prospect okays it. Your sale is half closed even before a complete cost estimate is made.

**4. Order your sales-building "Plan-It-Yourself" Lighting Layout Kit Today!** Use it to make your next lighting job more profitable—more fun! Costs only $1.75—contains enough material for a dozen lighting jobs. **Mail the coupon below,** or see your G-E lamp supplier.

**TO:** General Electric, Large Lamp Dept., ES-10, Nela Park, Cleveland 12, Ohio.

Gentlemen:

Please send me _____ new G-E "Plan-It-Yourself" Lighting Layout Kits @ $1.75 per kit. I enclose $_____.

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# Certified Lighting Bureaus

## Training school first step in New Orleans program

**By Harold L. Salaun, Commercial Supervisor, New Orleans Public Service, Inc., New Orleans, La.**

◆ THE CERTIFIED Lighting Program in the New Orleans area is sponsored by the Electrical Association of New Orleans, Inc. This association is comprised of all segments of the Electrical Industry in and around New Orleans.

After many meetings of the Association, various committees were appointed to carry out the functions of promoting the Certified Lighting Program.

Laurance C. Messick, manager of the National Lighting Bureau, spoke at a meeting of the Association in New Orleans on March 21, 1956. Mr. Messick discussed the four phases of the activity:

(1) Certifying plans for schools, offices, industrial and commercial lighting installations that meet IES recommended footcandle intensities.

(2) Selling-up quality feature.

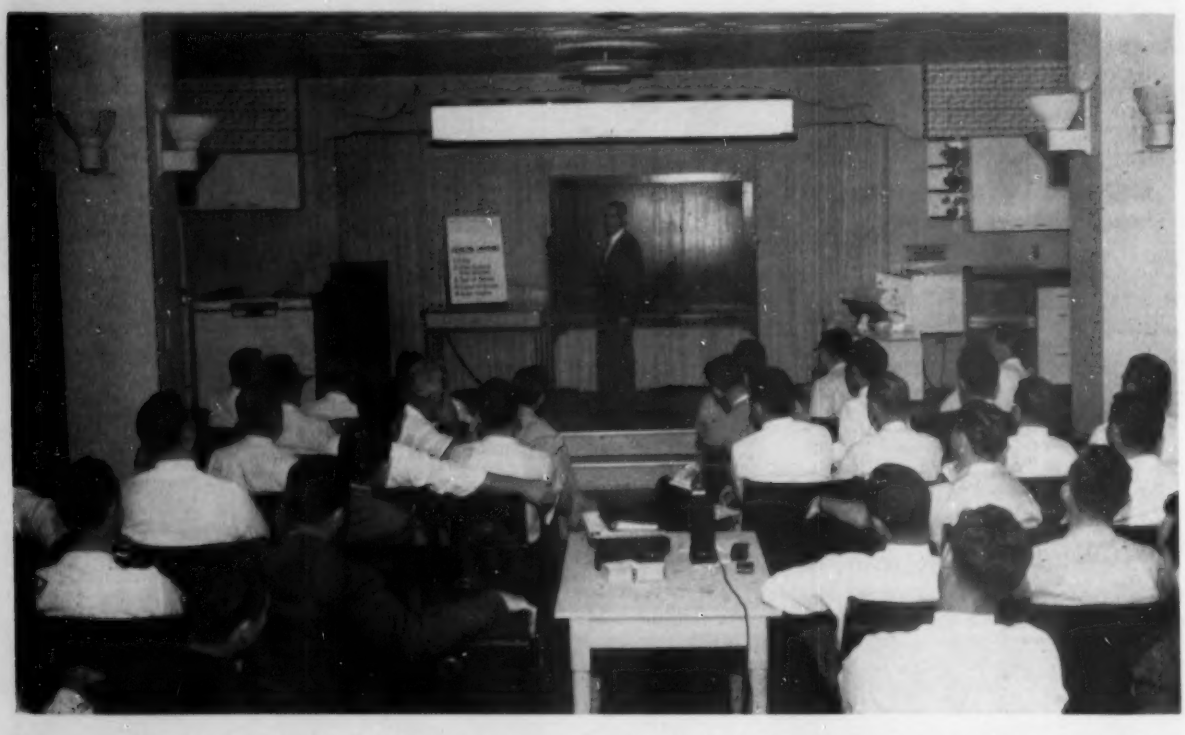
(3) Training contractors and lighting salesmen in designing and selling jobs that meet certification standards.

(4) Promoting certified lighting to arouse consumer interest and demand.

At the end of this meeting registrants were already "signing up" for the training course. The committee had previously decided that the class would be held to 40 persons and registrants would be accepted on a "first come first served" basis.

It wasn't long before a full roster of 40 electrical contractors and lighting salesmen had registered for the instruction meetings.

On April 17, the first of eight training meetings was held. The meetings were two hours in length, with a ten minute break in between the technical and the sales part of the discussion.



**Forty electrical contractors and lighting salesmen completed the lighting training program conducted by the Electrical Association of New Orleans in preparation for its lighting certification activity. Here, Mario Zervigon is conducting one of the eight two-hour training sessions that covered design and sales.**

# swing into action in South

In the sales discussion, audience participation was encouraged and requested. Various members of the audience were invited to come up on the "stage" and illustrate a salesman-customer discussion on various points of proper sales technique that had previously been discussed.

At the end of the presentation the audience was asked for constructive comments. This procedure usually brought out points that might have been left out of the discussion and aided materially in keeping the group participation and interest at a high level. It also gave rise to some very healthy and constructive discussions.

At various points during the program, some members of the group brought up certain sales objections that they had not been able to overcome. The problems were analyzed, with group participation, and solutions were decided upon. A few weeks later during the Course, these individuals confided in me that the suggested approach had worked. They sold the job.

The major topics discussed in the Sales part of the program were: the relighting market; what and why your customers buy; how your customers buy; the buying decisions; the selling process; the buying motives; types of proof; how to deal with objections; and the close.

Although 40 persons signed for the course of instructions, there was one registrant, who due to unusual pressure of work, was not able to attend any of the meetings

The remaining missed a total of only 31 meetings, resulting in an attendance figure of slightly over 90%. This exceptional attendance far exceeded any similar meetings held in New Orleans in the past.

It is partially attributable to the follow-up letters that were mailed after each meting to those who were absent, enclosing their copy of the sales booklet discussed at that meeting and indicating that we were looking forward to their being present at the next meeting.

A total of 38 certificates of satisfactory completion were issued at the end of the eighth meeting, which concluded one of the most successful series of meetings of this type ever held in New Orleans.

It is a little early now to report

*(Continued on page 134)*

# Piedmont Bureau plans two-state coverage

**By Roy A. Palmer, Manager Special Promotions, Duke Power Co., Charlotte, N. C.**

THE PIEDMONT Lighting Bureau is now actively engaged in forwarding the first phase of its certified lighting program. Four branches are in operation in Charlotte, Durham, and Greensboro, N. C., and Greenville, S. C.

Certified lighting schools were held in Charlotte, Durham, Greensboro, N. C., and Greenville, S. C. The following is the attendance in each town: Charlotte 15; Durham 15; Greensboro 32; Greenville 17.

Those attending these meetings were electrical contractors and their employees. We received wonderful reactions from the schools and as a result we have had several certified lighting jobs approved. We plan to hold another series of lighting schools. This time we will probably add Spartanburg and Winston-Salem. We will also open up the school for architects, consulting engineers, and anyone else interested.

We used some of our own men as instructors as well as representatives of lighting equipment manufacturers in this territory. All of them did an excellent job. We found that changing the instructors provided a change of pace as well as face at each of the meetings which resulted in added interest on the part of the students.

# First jobs approved by Chattanooga group

**By Mack Gilbert, Lighting Specialist, Electric Power Board, Chattanooga, Tenn.**

REALIZING the great promotional value of the National Lighting Bureau's campaign, the Electric League of Chattanooga voted in the spring of 1955 to sponsor the program and to conduct a lighting school. A committee was appointed with instructions to make all necessary arrangements so that the school could start in the fall of 1955.

The secretary of the League agreed to handle all correspondence, such as making application to the National Lighting Bureau, ordering all props and material for the school, etc. The lighting engineers of the Electric Power Board personally contacted all of the electrical contractors, electrical distributors, architects, engineers and others interested in lighting to explain the program and to get their application to attend the school. Others on the committee met to decide the dates and to arrange for the instructors. It was decided to conduct the seven meet-

ing course from October 4th to November 17th.

The committee was of the opinion that if it could secure the services of some outstanding lighting engineers as instructors that this would stimulate more interest in the school and make for a larger and better attendance. The League believes that this procedure was wise as there were 24 persons successfully completing the course.

A tuition of $15 was agreed upon as being sufficient to cover the cost of operating the course and to encourage enrollment.

Increased interest is being shown indicating that the Certified Lighting Program is on its way to even greater success in Chattanooga.

The following jobs have been submitted for certification and have been approved:

Small plant for disabled persons, Ordinary seeing task, 45 ft-c.

Bank trust department, Difficult seeing task, 50 ft-c.

Large appliance department, furniture store, 40 ft-c.

Drafting room of an industrial plant, 95 ft-c.

Plant office building, various offices, 40 - 70 ft-c.

General office of insurance company, 70 ft-c.

Five other outstanding jobs have been submitted and will be certified when the installations are completed.

To further promote the program, the Certified Lighting insert will be used in issues of "Today's Business" and "Electrified Industry." Also, the Benjamin "Sandwich Mailing Campaign" will be mailed to about 300 prospective lighting customers this fall.

The September meeting of the League will be built around the Certified Lighting Program. Laurance C. Messick, manager of the National Lighting Bureau, will be the main speaker. Certificates of certification will be presented, and those who attended the school will be honored.

# Program moving fast at national level

**By Laurance C. Messick, Manager, National Lighting Bureau, New York City, N. Y.**

THE CERTIFIED Lighting Program has definitely attained national status, with 17 bureaus in operation from Boston to San Diego, and Sacramento to New Orleans. These bureaus range in age from Providence, which commenced training September 21, 1954, to Nebraska-Iowa and Jackson, Miss., which started their programs in September.

Responses from the bureaus indicate that the program is being well received, but that one of the largest stumbling blocks to gaining full cooperation is the presence of plenty of work for the contractors. This has often resulted in contractors taking the training course, using the information they gained to go out and sell, and then neglecting to have their plans certified. Apparently, the available electricians are generally busy and hence contractors are only keeping abreast of the work which falls into their laps. It is our problem to convince them that they could gain more—today and tomorrow—by going out and selling good jobs now.

Recently a questionnaire was sent to the instructors of the several Certified Lighting sales training courses, as part of our continuing efforts to improve every segment of the program. It is interesting to note that the responses were invariably favorable, with constructive suggestions and with some plaudits for individual sections of the sales training operation. These responses have been used as the basis of our planning for improvements which we hope to have in effect in time for the autumn training classes.

Incomplete certification reports from seven bureaus show 458 jobs, with 20,797 fixtures and 3,693 kilowatts of load have been certified.

The fifteen bureaus which had commenced operation prior to, or during the spring of 1956, trained 1350 students in methods of selling and laying out proper lighting installations. Seventeen bureaus will be conducting training courses during the autumn of 1956, with an estimated total enrollment of between five and seven hundred.

Such markedly favorable interest has been shown in the program by groups with which I have talked that I have faith we'll have between 25 and 30 bureaus in operation by the end of the year.

A few months ago we held a grass roots conference in Providence and another in Boston, during which members of our Executive Committee talked with members of the committee which are running the program in those cities, as well as instructors and students from each area. The information gained during these discussions has been valuable in tightening up the program. Along the same track, we are to hold an October 2nd luncheon meeting of the secretaries of the electric leagues which are sponsoring Certified Lighting programs or which are considering such sponsorship. This luncheon will be held in Detroit on the day immediately preceding the opening of the annual meeting of the International Association of Electrical Leagues.

### Quality lighting demand

*(Continued from page 46)*

years, many business people have changed their thoughts from 20-foot-candle bare lamp installations to 40- and 50-foot-candle quality installations.

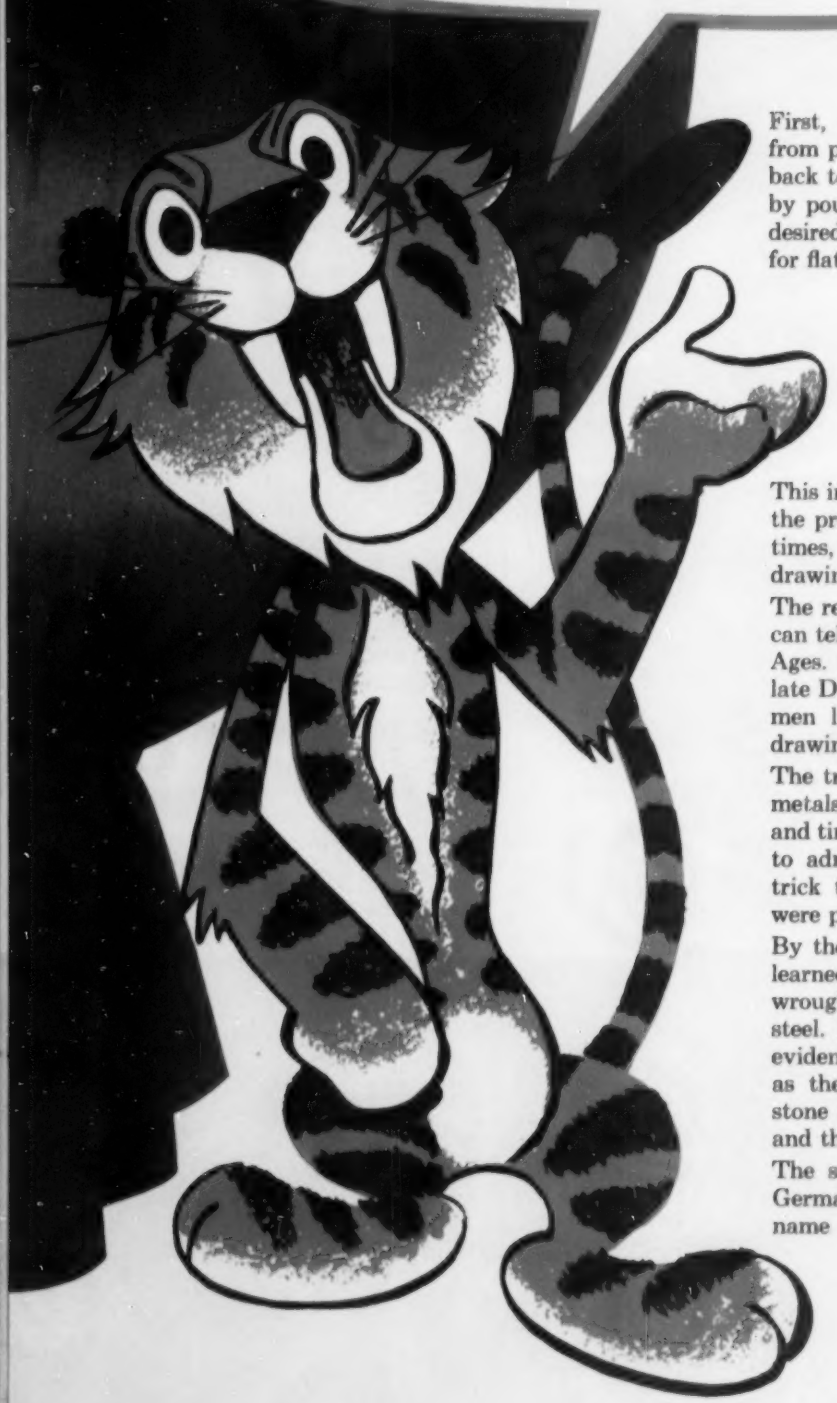
New Orleans Public Service, Inc., maintains a program of close cooperation with the architects, consulting engineers, contractors, dealers and others interested in the lighting industry. Last year 590 lighting layouts were prepared for commercial and industrial customers. Many of these were prepared at the request of architects, consulting engineers or contractors and were of valuable assistance to them in selling quality lighting.

Three years ago our company initiated an annual three-month lighting campaign for the dealers and contractors in this area. Interest in this campaign has increased each year.

Co-operation and understanding among all segments of the lighting industry is the key to this demand for good lighting. In this respect, New Orleans has come a long way in recent years and the future is very promising.

**AT LAST!** An excuse
to tell
our favorite story!

**Did you ever hear** the incredible, staggering, marvelous story of how they learned to draw steel wire? Since this is our 125th anniversary, it seems an appropriate time to let you in on one of the most underplayed industrial dramas of all time.



First, a little background. Wire, mostly made from precious metals, has been found that dates back to the year 2750 B.C. It was usually made by pounding on a bar with a hammer until the desired shape was obtained. They usually settled for flat wire.

This inefficient production method gave chills to the production men even back in the Pharaohs' times, so the race was on to find a method of drawing wire through dies.

The records are kind of sloppy, but as far as we can tell, the big break-through came in the Dark Ages. Some authorities further refine it to the late Dark Ages; but suffice it to say that learned men like Theophilus were writing about wire drawing in the period from 800 to 900 A.D.

The trouble was that they could only draw soft metals like gold or a then-popular alloy of lead and tin which we know as solder today. You have to admit that it doesn't seem like much of a trick to draw *solder* through a die, but things were pretty tough in those days.

By the beginning of the 17th century, men had learned how to draw still harder metals, like wrought iron. But *nobody* could draw high carbon steel. Not that they didn't try. There is some evidence that men searched for a drawing process as they searched for the elusive philosophers' stone that would transmute lead into gold . . . and they met with the same success.

The scene shifts to the little town of Altena, Germany, around the year 1650. Our hero (his name is in dispute, but it was probably one

Johann Gerdes) had tried all sorts of wire drawing tricks. He used dozens of different die lubricants, weird types of dies, slow pulling, fast pulling, high and low temperatures. Nothing worked, so you can hardly blame him for picking up the bundle of steel rods and marching outside with them. There, he flung open the door of what might be loosely called the gents' rest room, and dumped the rods down the hatch.

Some time later, they needed more rods for the experiment, so a few hardy souls retrieved the ones that had been banished in such a dramatic manner. The rods were carried back into the little factory and they drew beautifully—the first drawn high carbon steel wire. Some profound change had taken place in the steel. They didn't know what had happened, but they liked the results.

A thriving industry grew up in Altena. And they say it was quite a sight to see the workers come in of a morning with a yoke pole across their backs, supporting a lunch bucket at one end and a common household utensil at the other—the raw materials for a day at the wire mill.

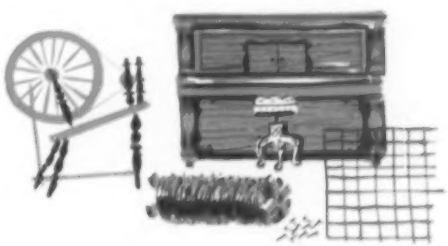
Altena enjoyed a complete monopoly on steel wire drawing for almost a century, until an obviously disgruntled worker found that dilute sour beer would also do the job. Finally, some kill-joy discovered that you could even use *water* if you did it right. The "secret" spread, and from then on, Altena had to bask in her rather impressive past glory.

On this 125th anniversary, we think we are entitled to mention that American Steel & Wire is a highly reputable organization employing about 30,000 devoted workers who really know how to do things to wire. The original company was formed in 1831 by two live-wire gentlemen named Ichabod Washburn and Benjamin Goddard, who, if they lived in this wonderful generation, would probably own half of the United States and Canada. Brilliant as these gentlemen were, the company never really started to roll until ladies became interested in hoop skirts, because this was the first true volume market for wire!

After the Civil War, the hoop skirt market went to pieces (you know how women are about fashion), and things looked pretty gloomy until barbed wire was invented around 1870. It's been one thing after another right up to the present time.

As the most knowledgeable wire maker in the USA, it was rather natural for us to begin making electrical wire and cable right at the beginning—1891 to be exact. Our salesmen frequently stumble across Tiger Brand electrical cable that has been buried in the ground or under water for 30 to 40 years and is still giving good service.

When we discuss incidents like this at our frequent sales meetings, the general comment is that our high production standards certainly don't help our replacement market very much, but fortunately, we're part of a great and growing industry. And, what with nuclear power plants and the like, there will always be a big demand for Tiger Brand Electrical Wire and Cable from buyers who want that extra margin of quality that we learned to build into our products a long, long time ago.



# A brief summary of Tiger Brand Electrical Wire & Cable

**TIGER BRAND PAPER CABLE**

Premium quality cable for high voltage use. Lead sheaths are applied under high pressure to insure dense surface. Lead tanks are kept under inert atmosphere to prevent formation of impurities. All constructions available, including type GN glass, neoprene fabric jackets.

**TIGER BRAND ASBESTOS CABLE**

On these cables, we do *not* apply the asbestos as a twisted yarn, because the yarn will frequently open when the cable is kinked. Tiger Brand cables feature asbestos that is combed and carded, then applied as a true felt which is compressed tightly around the conductor.

**TIGER BRAND VARNISHED CAMBRIC CABLE**

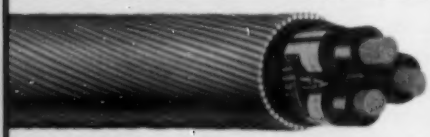
This is the great "in-between" insulation, for use where you want greater moisture resistance than paper has, and higher voltage ratings than offered by rubber insulations. In dry locations, varnished cambric can be used without a lead sheath, because it is not subject to oil drainage.

**TIGER BRAND RR CABLE**

Features rubber insulation and a neoprene sheath. A versatile cable—with heavy jackets—it can be buried directly in the earth. It is perfect for conduit wiring when supplied with a thin sheath. When several RR cables are combined with a bare messenger, you have a self-supporting aerial cable.

**TIGER BRAND AMERCLAD**

The very highest quality in *heavy-duty* portable cords and cables. All jackets are vulcanized in a lead sheath, and are permanently marked with molded identifications. High neoprene jackets show phenomenal resistance to abuse, sunlight, grease, oil or acid mine water.



**TIGER BRAND SUBMARINE CABLE**

Many Tiger Brand submarine cables are still in service after 30 or more years. Heavy galvanized steel armor wires are applied with long lay to resist tensile stress. AS&W pioneered in construction of aluminum armor for salt water use.

**TIGER BRAND INTERLOCKED ARMOR CABLE**

Available up to four-inch core diameter, with armor of steel or aluminum. Eliminates costly conduit bending and fitting. Splices can be made anywhere along the cable's length. A great money saver for plant wiring installations, especially in cramped quarters.

**TIGER BRAND ELEVATOR CABLE**

Cables are carefully designed to have just the right degree of flexibility so they will bend easily at the bottom of the shaft, but not so sharply that the wires will be deformed. We also supply a complete range of annunciator, lighting and signal cable, plus hatch wire for elevator shafts.

*A Standard Tiger Brand Cable for every special job*

AMERICAN STEEL & WIRE DIVISION • UNITED STATES STEEL

## USS Tiger Brand Electrical Wire & Cable

# Relighting major trend in Baltimore area

**By H. M. White, Lighting Service Dept., Baltimore Gas & Electric Co., Baltimore, Md.**

◆ FOR THE PAST FIVE YEARS we have observed the migration of business from the center of Baltimore to the suburban area immediately surrounding the city. Many large shopping centers on the outskirts are well established and thriving. They have in themselves brought about a great deal of lighting activity in the past five years and there is still no let up. The phenomenal growth of the shopping centers has been viewed with alarm by the downtown stores. Their business has been adversely affected and some small stores are closing. There is now a move by the downtown stores, along with the City Planning Commission, to take measures to hold business in the center of the city.

As a consequence of this effort we are now experiencing the renovation of several of the old buildings to hold tenants from moving out of the center of the city. These improvements generally include new wiring and lighting systems. Therefore, there is a trend to revamp old buildings in the center of the city. Many of these installations are quite challenging because of the physical limitations encountered in the revamping process. This is particularly true in relighting.

A typical condition is illustrated by the photographs of the Weaver Building. Here is an office which has been revamped in an old building. In order to preserve some of the traditional charm in this office, it was decided to retain the old bronze candle chandeliers together with the deep beams and molded arched ceiling. Still it was necessary to have good illumination for office work, and some means had to be found to supplement the old chandeliers. It was decided to surface mount 4-light 74-watt 430 ma slimline fixtures on the underside of the deep longitudinal beams. These fixtures were tailored so that they were the exact width of the beam making the fixture appear to be part of the beam. Since it was impossible to make the luminous portion of the fixture the same length as the beam, metal fill-ins were made to fit between the ends of the fixture and the columns.

Another photo shows the lighting treatment of an elevator lobby in this old building. Here a new luminous tile ceiling was installed in a small elevator lobby making it an inviting place to enter.

This trend toward revamping the lighting in old buildings demands considerable ingenuity in planning as these examples indicate.

**A typical example of Baltimore relighting activity is this remodeled office. Surface mounted 4-light, 74-watt 430-ma slimline fixtures are used on the underside of the deep longitudinal beams. Metal fill-ins fit between the ends of the fixtures and the columns. It was decided to retain the old bronze candle chandeliers, deep beams, and molded arched ceiling to preserve some of the traditional charm of the office. At right, a new luminous ceiling makes the small elevator lobby an inviting place.**

# Memphis area becomes more lighting conscious

**By Fred M. Niell, Lighting Engineer, Memphis Light, Gas and Water Division, Memphis, Tenn.**

◆ IT WAS a strange feeling the first time the user of a proposed lighting system announced that he wanted a minimum of 50 footcandles throughout his new offices! Further, said he, the fixtures must be shielded for glare reduction. This happened about four years ago, and was quite a shock. Usually it was necessary to start at the beginning with each new customer and painfully explain the various factors involved in good lighting versus poor, but this enlightened fellow had been doing some reading of his own.

Today, it is not at all unusual to have a customer insist on a higher level of illumination than the published minimums. The shock is gone. In its place remains the inner pleasure of having helped in the education of the public to the realization of the advantages of proper lighting. Continued cooperation between engineers and contractors has accounted for most of this progress. Whereas a few years ago the electrical contractor was prone to question the engineer's recommendation, today he usually agrees wholeheartedly and suggests that we might "add another row over here."

Speaking of rows, the manufacturers insist that this immediate trade area accounts for a higher than normal percentage of continuous-row-two-lamp installations. Particularly in offices, the two-lamp four-foot direct-indirect rapid start fluorescent is by far more popular than the previous leader, which was the individually mounted four-lamp unit. Manufacturers attribute this improvement to a concerted effort by engineers, agents, wholesalers and contractors. Many of them are IES members and they understand and appreciate each other.

The evidence of public education is easily detected in the case of store owners too. A recently remodeled Memphis Main Street store has an average general illumination level of over 150 footcandles from a combination incandescent-fluorescent system. The problem in such an area is how to highlight specific merchandise without melting it. With a general level of 150 footcandles, the windows must run about 500. This fades cloth in a hurry, dries the oil out of a watch, and wilts flowers before noon of the first day.

In the particular store mentioned, the owner spent as much time studying lighting systems as he spent studying air conditioning, and his final wall color selections were made under the store lighting system after its installation. Isn't this just what we have been preaching for years?

Where are we headed if public education continues at this pace? We recklessly predict that the day may come when the lighting system is considered first and the sprinkler heads and air conditioning ducts get second choice for location. We might even find that lighting equipment is considered first in the budget instead of last. And (perish the thought) we might find that lighting engineers are no longer necessary!

# Tampa street lighting year's biggest project

**By James A. Banton, Illuminating Engineer, Tampa Electric Co., Tampa, Fla.**

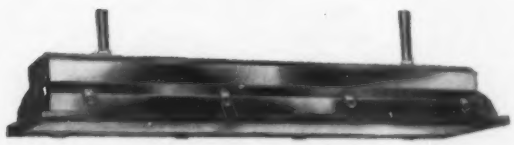
◆ TWO PROJECTS on which our Lighting Department has spent a great amount of time during the year have been the new Tampa Electric Company office building, which we occupied in early October, and street lighting for the City of Tampa.

**The installation of 280 mercury vapor luminaires has turned Bayshore Blvd. into one of Tampa's safest streets. A nine-month survey conducted prior to the installation showed that 21 after-dark accidents on a 2½-mile strip had accounted for seven injuries and three fatalities. A survey made after the lighting system was installed revealed that only 14 nighttime accidents occurred during a similar nine-month period. Injuries were reduced 43% and fatalities were completely eliminated.**

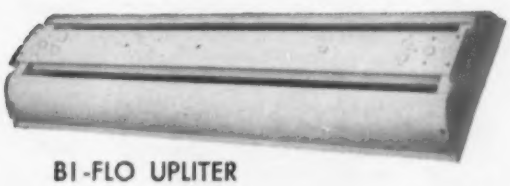
## HOWEVER YOU MEASURE YOUR LIGHTING REQUIREMENTS

# there's a *Wheeler* fixture for every job

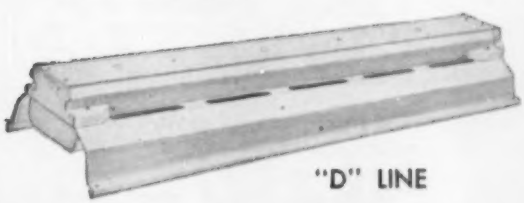
In industry after industry, on job after job, Wheeler's wide range of fixtures and features insures peak efficiency for practically every lighting requirement. Shown here: three outstanding examples of Wheeler's tremendous line of industrial lighting fixtures.



DUST-TIGHT • VAPOR-TIGHT



BI-FLO UPLITER



"D" LINE

There's a Wheeler Incandescent or Fluorescent Lighting Fixture to meet every industrial requirement.

## *Wheeler* Reflector Company

*275 Congress Street - Boston, Mass.*

Distributed Exclusively through Electrical Wholesalers

Certified Lighting for a Better America

*75th Anniversary* 1881-1956

Our new building will be one of the most beautiful and modern utility office buildings in the country. It will be complete in every detail and will contain numerous innovations which are certain to impress our own employees as well as our visitors.

Street lighting here has been moving at a rapid pace. Since 1950 the number of street lights has increased greatly, including approximately 20 miles of mercury vapor lighting on our main streets and traffic arteries. The city, during the first half of 1956, has authorized installation of 17 additional mercury vapor installations which will bring the total distance lighted by mercury vapor to 50 miles. These installations are scheduled for completion by, or before, the end of 1956.

# Decorative floodlighting heads Oklahoma activity

**By Paul R. Sheline, Lighting Engineer, Oklahoma Gas and Electric Co., Oklahoma City, Okla.**

◆ BUILDING OWNERS in our area have shown an increased interest in decorative floodlighting. Most of the activity has been with churches and office buildings. One of our big problems in promoting floodlighting is helping the owner "see" how floodlighting will increase the beauty of his building.

An old Chinese Proverb says "A picture is worth 10,000 words." We all agree with this statement, but we also know that an actual demonstration is worth many pictures. With these facts in mind, we decided that we had a need for some method of demonstrating floodlighting to our customers.

What kind and how much lighting equipment would be needed to demonstrate any type of floodlighting application? This equipment would have to meet the following requirements: (1) It must be portable enough to be handled by one man and moved by automobile or shipped by truck. (2) It must be flexible enough to allow us to demonstrate any floodlighting application. (3) It must be strong enough to stand the beating incurred in moving. (4) Similar equipment must be readily available to the customer. (5) It must be as inexpensive as possible.

After checking all types of equipment we decided to buy equipment that used the PAR and Reflector lamps. We purchased three lamp holders for the 300-watt PAR-56 lamps, 300-watt PAR-56 lamps with both flood and spot light distribution patterns, three lamp holders for the 200-watt PAR-46 lamps, 200-watt PAR-46 lamps with both flood and spot light distribution patterns, three lamp holders for the 500-watt R-40 lamp, 500-watt R-40 lamps with both flood and spot light distribution patterns, several lamp holders for 150-watt PAR and 150-watt R-40 lamps, and 150-watt PAR and R-40 lamps with both flood and spot light distribution patterns.

All of these lamp holders were equipped with rubber cords and standard rubber caps. All lamp holders were equipped so they could be mounted in clusters or as individual units.

We have been pleased with the results obtained by using our floodlighting demonstration equipment. This equipment has been used to flood light almost all types of buildings—mostly churches and office buildings, ground areas, signs, and even small stages. There are several advantages of actually demonstrating proposed floodlighting. The obvious advantage of allowing the building owner, church building committee, or architect to see what the actual installation will look like is worth the effort of putting on the demonstration. This allows the demonstration to be "shown" many times to many people.

A demonstration saves much time in designing a proposed installation. In a short time, you can see how many lights will be needed. You can see exactly where they should be placed to give the right highlights and shadows. We have been pleasantly surprised at the good lighting effect that can be obtained by using a small number of these low wattage lamps. One church steeple in Fort Smith, Arkansas, has been beautifully lighted with only eight 300-watt PAR-56 lamps. his steeple is over 100 feet high and is lighted on all four sides.

Sometimes we get the electrical contractor to help with the demonstration. This helps the contractor

**This bank floodlighting installation at Durant, Oklahoma, was the result of allowing the bank president to see what the floodlighted building would look like. This building is lighted with only five 150 watt PAR lamps mounted in inexpensive holders.**

## COME TO CROUSE-HINDS FOR

# Special Purpose Lighting...

*Condulet**
**EXPLOSION-PROOF FIXTURES**
for N.E. Code Class I Locations

Operate at temperatures below ignition temperatures of surrounding explosive gas-air or vapor-air mixtures. Resist internal explosions without damage. Prevent escape of flames to surrounding atmospheres.

*Condulet*
**DUST-TIGHT FIXTURES**
for Class II Locations

Exclude combustible dusts from interior of fixture. Even when fixture is completely blanketed with dust, temperature of fixture will not cause ignition.

**COME TO CROUSE-HINDS for Free-of-Charge Lighting Help . . .**

CROUSE-HINDS Engineers will survey your layouts for lighting hazardous industrial locations . . . describe National Electrical Code safety regulations . . . suggest precautions to observe . . . recommend UL-approved fixtures for each danger-area, etc.

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*Condulet*
**VAPORTIGHT FIXTURES**
for Class III Locations

Protect bulb, receptacle and wiring from moisture and corrosive vapors in damp locations. Enclosures are designed to prevent entrance of fibers and flyings, escape of sparks, burning material or hot metal.

*Condulet*
**FLUORESCENT FIXTURES**

Fluorescent fixtures also available for Class I, Group C and D; Class II, Groups E, F and G; and Class III.

● *Write, wire, or call your nearest Crouse-Hinds Office for complete details.*

A NATIONWIDE DISTRIBUTION exclusively through ELECTRICAL DISTRIBUTORS

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to see exactly what we are trying to accomplish. Generally after one of these demonstrations there is a "better feeling" between electrical contractor, customer, and utility representative.

# Atmosphere lighting in Carolina restaurant

**By G. O. Green, Commercial Sales Representative, Carolina Power & Light Co., Raleigh, N. C.**

◆ MY MOST RECENT lighting job is one that I believe will be among the most outstanding steak house restaurants in the South. This design includes roll cove lighting with fixtures overlapping to guard against any darkness between. In the center dining area is an eight cluster type fixture made in Germany; also a six cluster matched fixture of the same kind in the entrance.

The check room has an all louvered ceiling, and all lighting controls for the dining areas are installed in the check room. On pastel plywood back of the small bar, we will use six watt G-E lamps with off and on circuit built into the lamp. These small bulbs will be constantly flashing on and off, giving the effect of stars in the sky, with pinpoint brilliance.

In the other portion of the building there are three booths with folding doors for private parties. Here I used a three cluster indirect fixture that also was made in Germany.

The nicest feature of the dining area is the flexible lighting accomplished with the use of four dimmers. The lights can be dimmed, candles placed on the tables, with a low glow from fixtures underneath the cove and the central dining area.

Kitchen lighting consists of three continuous rows of eight foot, T12, two tube, rapid start industrial type fixtures, giving approximately 80 footcandles in the kitchen. Under the hood there are several vapor type fluorescent fixtures that can be cleaned easily.

The entrance has a rather large canopy with downlights (hi-hats) accommodating two cars for unloading purposes.

# Texas bank remodeling emphasizes lighting

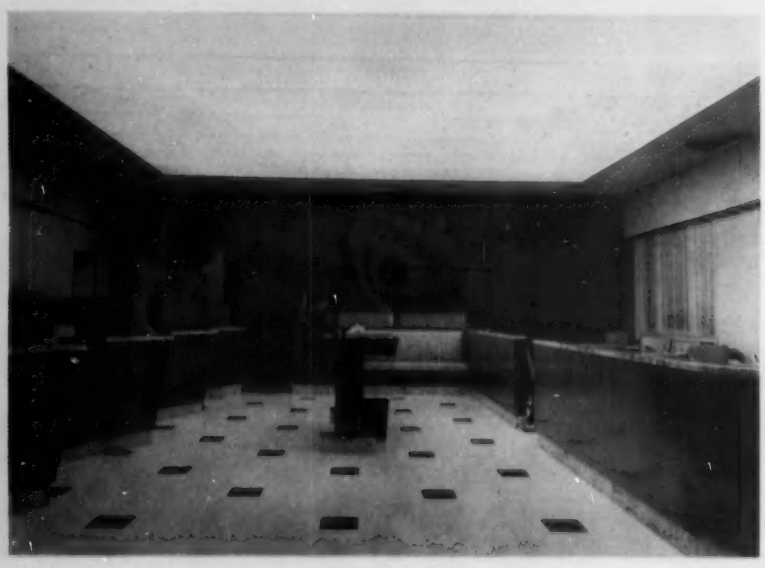
**By Philip O. Gilbert, District Commercial Manager, Central Power and Light Co., Victoria, Texas.**

◆ ONE OF TEXAS' most historic spots, The First National Bank in Goliad, has remodeled its banking facilities to conform to the best for rendering banking service to its customers.

In planning the changes to be made, the officers of the bank gave much thought to the lighting. It was decided that the very best lighting sytsem available would be used to provide well distributed, glare free and shadowless lighting —lighting that would enhance the beauty of the interior and create a feeling of spaciousness in a small area. With the assistance of the Central Power and Light Company's Guadalupe District Commercial Department, several systems were considered before choosing the one to be used.

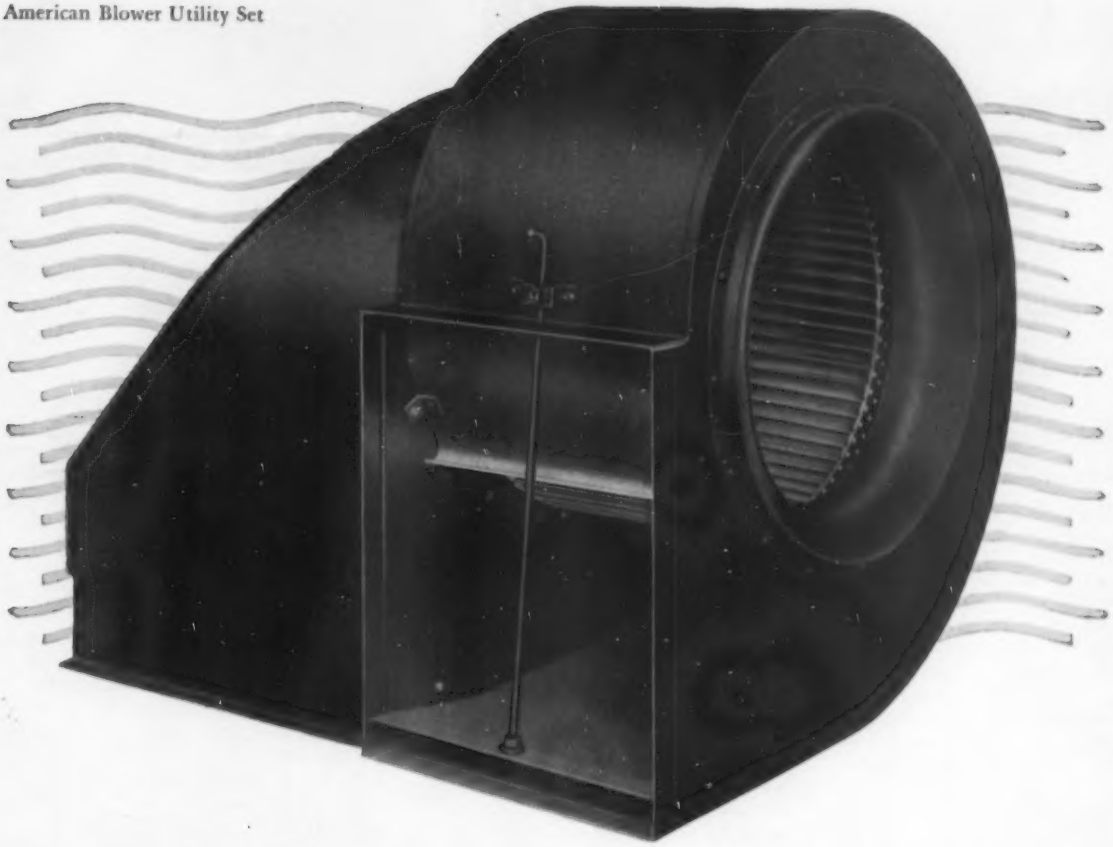
Taking into consideration the advantages and disadvantages of each, a luminuous ceiling system was chosen. The installation consists of 10 rows of three 96 inch single lamp fixtures on 36 inch centers. The thirty fixtures are mounted 18 inches above a corrugated white plexiglass diffusing panel and are lamped with F96 T12 standard cool white lamps. The

*(Continued on page 130)*



**This Wakefield luminous ceiling was chosen for relighting the First National Bank in Goliad, Tex. Ten rows of three 96-in. single lamp fixtures on 36-in. centers are mounted 18 inches above a corrugated white plexiglass diffusing panel and are lamped with F96 T12 standard cool white lamps.**

American Blower Utility Set



# We call it a utility set, because it solves so many ventilating problems

It is self-contained, consists of a motor, a Sirocco fan wheel and a housing, and is used to supply or exhaust air where duct systems are required.

That covers a lot of territory and a raft of commercial and industrial applications – from air-cooling electronic tubes in laboratories, to ventilating sprawling apartment buildings and hard-to-reach areas in factories. And that calls for a wide range of sizes and capacities. You get this large selection from American Blower.

In fact, American Blower offers a complete line of utility sets – as well as propeller fans, attic fans, and home ventilators . . . a good reason why it pays to *standardize* on American Blower.

Why not call our nearest branch today for complete information.

**IT PAYS TO STANDARDIZE ON THE AMERICAN BLOWER LINE!**

- **Utility Sets** for general supply or exhaust. Ratings certified; self-contained. Sirocco wheels, 3 to 36 inches.
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- **Aeropel Home Ventilators** for use in kitchens, bathrooms, recreation and laundry rooms. Attractive design; quiet; easy to install.
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# Know the law

*by Arthur L. H. Street*

## Safety responsibility in co-ordinated work

TO WHAT EXTENT is an electrical contractor bound, in wiring a building, to safeguard against dangers to persons or property arising from co-ordinated work of other contractors?

The Mississippi Supreme Court lately dealt with this important subject in the case of Hadad, Jr., v. Booth, 82 So. 2d 639. Hadad, builder-owner of a house, let the work of wiring it to an electric company. A plumbing company agreed to install a suspension type of central heater, designed to be suspended from a ceiling with clearance between its bottom and the floor. It was wired for operation of a fan to blow out hot air. The heater was placed on a wooden floor, with an insufficient buffer of asbestos, and resulting fire badly damaged the house.

The owner sued both the electric company and the plumbing company. Did the trial judge properly decide that the electric company was not liable, but that the plumbing contractor was?

Yes, declared the Mississippi Supreme Court.

The court briefly disposed of the proposition that the electric company was not liable, by noting that all that it had agreed to do, so far as the heater was concerned, was to connect the electric power lines to the two wires in the heater's utility box, and to connect the room thermostat. The interior wiring of the heater was done by the manufacturer.

### Plumber ruled liable

The court threw the entire blame upon the plumbing company. But in doing so, it recognized, in effect, that there are situations in which an electrical contractor might leave his work in such condition as to create a danger when another contractor has done his work. True, in that case, too, a plumber had installed a heater without providing noncombustible insulation in a wall that was to be constructed by another contractor. But the applicable rule of law would be the same if an electrical contractor were to leave his work in such condition that a danger would be created in the performance of another contractor's work. This statement by the court would clearly apply to a case of the last mentioned type:

"One who * * * installs a dangerous instrumentality * * * is in such installation charged by law (1) with knowledge of the particular dangers characteristic of the instrumentality and of the manner and means by which the danger or dangers are likely to "result in" actual harm, and (2) with the duty to use that degree of care which is commensurate with the danger, to guard or insulate against it. Such a rule has its roots in an impelling necessity in the promotion of the safety and security of life and property. * * *

" * * * When the installation is in a structure which, in the main is being erected by another contractor, and the work done or being done by the other contractor or about or near the heater"—or let us say, wiring—is such as to create "danger, the party who has the contract for the installation * * * must inform the owner that the work as done or being done by the other contractor," is apt to create a dangerous situation — "thereby warning the owner so that he may have the dangers * * * removed or remedied." Failure to give this warning may render the installer of the heater or wiring liable for consequential damage "to the same extent as if he had done the work of the other contractor. For stronger reasons, the installer of such an instrumentality — heater, wiring, etc.—is liable if by word or act "he leads those who are to use the instrumentality to believe it to be * * * safer than he knows it to be."

**Note: Asterisks * * * indicate that words or sentences have been omitted from verbatim court decisions.**

## Responsibility for walkway accident

OF PARTICULAR INTEREST to electrical contractors and their employees is a decision recently rendered by the United States Court of Appeals, District of Columbia Circuit, in the case of Halin v. United Mine Workers of America, 229 Fed. 2d 784.

The Union awarded to a construction company a contract to reconstruct an old office building and an independent contract to an electrical contracting company to install a new electrical system in the building.

Halin, an employee of the electrical contractor, was injured when he fell from one floor to another while using a walkway of boards that had been constructed by the principal contractor. He sued both the Union as owner of the building and the principal contractor. (The electrical company was not involved because it paid Halin, as its own employee, workmen's compensation for the injury.)

The court said that the suit was properly dismissed as to the Union, the owner, because it was not negligent in any way, for the walkway was erected by the principal contractor.

### Purpose of walkway

But the court said that if Halin could prove what he claimed to be true, he could collect damages from the principal contractor on the theory that the walkway had been constructed by that contractor, not merely for use by its own employees, but also for use of the electrical employees, so that the work of both contractors could be co-ordinated. That is, the building contractor's men had to tear out a floor before the electricians could work under the joists. So, the contractor laid a walkway for the use of both contractor's men.

*(Continued on page 131)*



Electrical South Data Sheets — Series III — Electrical Estimating

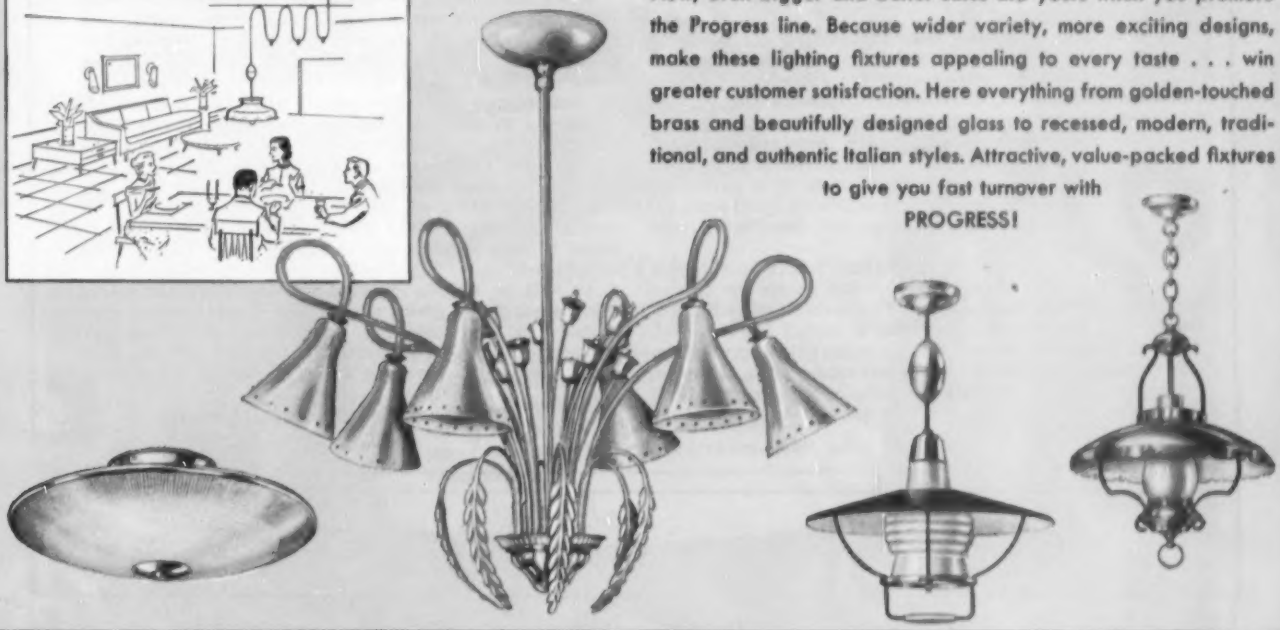
NEW! NEW! NEW!

progress

...the word for everything at...

## America's Fastest-Selling Line of Lighting Fixtures



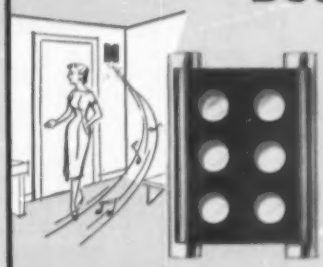


Now, even bigger and better sales are yours when you promote the Progress line. Because wider variety, more exciting designs, make these lighting fixtures appealing to every taste . . . win greater customer satisfaction. Here everything from golden-touched brass and beautifully designed glass to recessed, modern, traditional, and authentic Italian styles. Attractive, value-packed fixtures to give you fast turnover with PROGRESS!

NEW! **Power Vent Ventilating Fans and Range Hoods**

Every item in this sensational new line represents more-for-the-money value! Fine styling and top performance by PROGRESS—a name your customers recognize for quality in lighting fixtures—insure fast selling action. Why PROGRESS means better business for you!

NEW! **Beautiful Door Chimes**



Handsomely styled, they include Hi Fidelity chimes in bone white or brass, as well as recessed electric chimes. Also repeating chimes in wood, copper, brass and other special finishes. Feature them—for a real sales-plus!

**PROGRESS MANUFACTURING CO.**
PHILADELPHIA 34, PA.

PROGRESS MANUFACTURING CO.
Custer Ave. & Tulip St., Philadelphia 34, Pa.

Please send me information on these Progress lines:

☐ Lighting Fixtures ☐ POWER VENT Ventilating Fans and Range Hoods
☐ Door Chimes

AHLI

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

OCTOBER IS "HOME LIGHTING MONTH"

Familiar symbols of safety

# Electrical South Data Sheets — Series III — Electrical Estimating

## New, revised estimating tables continued in this issue

A NEW SERIES of estimating tables, completely revised in the light of more recent jobs and experience, are presented in this issue and will appear from month to month in forthcoming issues. These electrical estimating data sheets cover labor only and are arranged alphabetically with the basic material headings as a title for each tabulation.

Labor units given in these tabulations are based on a minimum of interference during work progress. The averages listed do not provide for abnormal job conditions, and any such abnormal conditions will require adjustments by the user, based on his experience.

The work units covered by each table are composed of one or more separate but closely related operations necessary for the complete installation of a particular basic item of electrical equipment. These operations associated with the basic material are described at the bottom of each table.

Most of the electrical estimating tabulations follow the same form. Column 1 at the left shows the size of the material to be installed. The second column from the left gives the time required to install the material, and it should be noted especially that this "productivity" column may be based on individual units or in the case of cable or conduit on units of 100 feet or 1,000 feet. The abbreviations "Ea." for each, "C" for hundreds, and "M" for thousands in Column 2 indicate the basis of the labor hours.

Columns 3 to 13, from the left, give the actual labor costs in dollars per unit of installation, at various hourly wage rates.

When calculations are being made for an hourly wage rate that doesn't correspond to any of the rates listed in Columns 3 to 13, the user may multiply the number of hours in Column 2 by 100 and this will give the labor cost based on an hourly wage rate of $1 per hour. By multiplying this by the hourly wage rate that actually applies in the user's locality, the exact labor cost of the operation may be obtained. Labor costs obtained in this way will be for units, hundreds of feet, etc., as given in heading of Column 2 of the table.

The labor units covered by the tables represent direct job labor costs and do not include delivery of material to site, engineering, estimating, or any other indirect cost.

As will be noted, some of the electrical estimating tabulations to be given will be for independent operations, such as excavating, backfilling, etc. These are included for use in preparing estimates on work of a special nature not covered under a specific table heading.

Tables will appear in alphabetical order.

CABLE NON-METALIC (BUILDING)
WOOD RESIDENCES (REWORK)

| NO. COND. SIZE | HRS. "C" | LABOR COST INSTALLED PER FT. AT FOLLOWING RATES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $1.25 | $1.50 | $1.75 | $2.00 | $2.25 | $2.50 | $2.75 | $3.00 | $3.25 | $3.50 | $3.75 |
| 2/14 | 5.7 | .071 | .086 | .10 | .114 | .128 | .143 | .157 | .171 | .185 | .20 | .214 |
| 3/14 | 6. | .075 | .09 | .105 | .12 | .135 | .15 | .165 | .18 | .195 | .21 | .225 |
| 4/14 | 6.5 | .081 | .096 | .114 | .13 | .146 | .163 | .179 | .195 | .211 | .228 | .244 |
| 2/12 | 5.8 | .073 | .087 | .102 | .116 | .131 | .145 | .16 | .174 | .189 | .203 | .218 |
| 3/12 | 6.3 | .079 | .095 | .11 | .126 | .142 | .158 | .173 | .189 | .205 | .221 | .236 |
| 4/12 | 7.2 | .09 | .108 | .126 | .144 | .162 | .18 | .198 | .216 | .234 | .252 | .27 |
| 2/10 | 6. | .075 | .09 | .105 | .12 | .135 | .15 | .165 | .18 | .195 | .21 | .225 |
| 3/10 | 6.6 | .083 | .099 | .116 | .132 | .149 | .165 | .182 | .198 | .215 | .231 | .248 |
| 4/10 | 7.4 | .093 | .111 | .13 | .148 | .167 | .185 | .204 | .222 | .241 | .259 | .278 |
| 2/8 | 6.5 | .081 | .098 | .114 | .13 | .146 | .163 | .179 | .195 | .211 | .228 | .244 |
| 3/8 | 7.2 | .09 | .108 | .126 | .144 | .162 | .18 | .198 | .216 | .234 | .252 | .27 |
| 2/6 | 6.2 | .078 | .093 | .109 | .124 | .14 | .155 | .171 | .186 | .202 | .217 | .233 |
| 3/6 | 8.7 | .109 | .131 | .152 | .174 | .196 | .218 | .239 | .261 | .283 | .305 | .326 |

E-101-B

LABOR: INCLUDES DRILLING, CUTTING, INSTALLATION, STRAPPING AND CONNECTING TO BOXES (NO TAPS) - ADD FOR OPENING UP JOB.

10-56

Electrical Estimating—III

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CITY _____ ZONE _____ STATE _____

# *Familiar symbols of safety*

## PROTECTION AT TRAIN CROSSINGS

### FOR YOUR WIRING PROTECTION

**Standard-threaded rigid steel conduit is the only wiring system approved today by the National Electrical Code as moisture-, vapor-, dust- and explosion-proof for use in hazardous locations and occupancies.**

If the safe and efficient functioning of your electrical systems—in any type location—is a problem, then Youngstown "Buckeye" full-weight rigid steel conduit should be your specification. Field reports state: "It's easier to bend—easier to fish wires through and due to its superior corrosion resistance, affords a much longer service life."

Leading architects, owners and contractors have made "Buckeye" Conduit their standard because they've found its use increases both profits and customer satisfaction.

Delivery is no problem—as all leading electrical distributors carry complete and ample stocks of Youngstown "Buckeye" Conduit. Their quick, courteous service is yours for a phone call—why not today?

QUALITY YOUNGSTOWN SERVICE

**Ask your distributor for Youngstown Buckeye Full Weight Rigid Steel Conduit and Youngstown Electrical Metallic Tubing.**

## THE YOUNGSTOWN SHEET AND TUBE COMPANY

*Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices - Youngstown 1, Ohio
District Sales Offices in Principal Cities

CABLE NON-METALLIC SHEATHED (BLDG)
NEW WAREHOUSES WOOD

| NO. COND'R'S SIZE | HOURS PER C | LABOR COST INSTALLED PER FT. AT FOLLOWING RATES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $1.25 | $1.50 | $1.75 | $2.00 | $2.25 | $2.50 | $2.75 | $3.00 | $3.25 | $3.50 | $3.75 |
| 2/14 | 3.5 | .044 | .053 | .061 | .07 | .079 | .088 | .096 | .105 | .114 | .123 | .131 |
| 3/14 | 3.7 | .046 | .056 | .065 | .074 | .083 | .093 | .102 | .111 | .12 | .13 | .139 |
| 4/14 | 4.0 | .05 | .06 | .07 | .08 | .09 | .10 | .11 | .12 | .13 | .14 | .15 |
| 2/12 | 3.6 | .045 | .054 | .063 | .072 | .081 | .09 | .099 | .108 | .117 | .126 | .135 |
| 3/12 | 3.9 | .049 | .059 | .068 | .078 | .088 | .098 | .107 | .117 | .127 | .137 | .146 |
| 4/12 | 4.3 | .054 | .065 | .075 | .086 | .097 | .108 | .118 | .129 | .14 | .151 | .161 |
| 2/10 | 3.7 | .046 | .056 | .065 | .074 | .083 | .093 | .102 | .111 | .12 | .13 | .139 |
| 3/10 | 4.2 | .053 | .063 | .074 | .084 | .095 | .105 | .116 | .126 | .137 | .147 | .158 |
| 4/10 | 4.3 | .054 | .065 | .075 | .086 | .097 | .108 | .118 | .129 | .14 | .151 | .161 |
| 2/8 | 4.0 | .05 | .06 | .07 | .08 | .09 | .10 | .11 | .12 | .13 | .14 | .15 |
| 3/8 | 4.7 | .059 | .071 | .082 | .094 | .106 | .118 | .129 | .141 | .153 | .165 | .176 |
| 2/6 | 4.8 | .06 | .072 | .084 | .096 | .108 | .12 | .132 | .144 | .156 | .168 | .18 |
| 3/6 | 5.2 | .065 | .078 | .091 | .104 | .117 | .13 | .143 | .156 | .169 | .182 | .195 |
| 2/4 | 5.1 | .064 | .077 | .089 | .102 | .115 | .128 | .14 | .153 | .166 | .179 | .191 |
| 3/4 | 6.1 | .076 | .092 | .107 | .122 | .137 | .153 | .168 | .183 | .198 | .214 | .229 |

E-101-B

LABOR: Includes preparation, drilling, cutting, strapping and connecting to boxes. (No taps or excavating.)

10-56



CABLE NON-METALLIC SHEATHED
NEW WOOD STORE BLDGS.

| NO. COND'R'S SIZE | HOURS PER C | LABOR COST PER FT. INSTALLED AT FOLLOWING RATES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $1.25 | $1.50 | $1.75 | $2.00 | $2.25 | $2.50 | $2.75 | $3.00 | $3.25 | $3.50 | $3.75 |
| 2/14 | 4.5 | .054 | .065 | .075 | .086 | .097 | .108 | .118 | .129 | .14 | .151 | .161 |
| 3/14 | 4.6 | .058 | .069 | .081 | .092 | .104 | .115 | .127 | .138 | .15 | .161 | .173 |
| 4/14 | 5.0 | .063 | .075 | .088 | .10 | .113 | .125 | .138 | .15 | .163 | .175 | .188 |
| 2/12 | 4.6 | .058 | .069 | .081 | .092 | .104 | .115 | .127 | .138 | .15 | .161 | .173 |
| 3/12 | 5.0 | .063 | .075 | .088 | .10 | .113 | .125 | .138 | .15 | .163 | .175 | .188 |
| 4/12 | 5.3 | .066 | .08 | .093 | .106 | .119 | .133 | .146 | .159 | .172 | .186 | .199 |
| 2/10 | 5.0 | .063 | .075 | .088 | .10 | .113 | .125 | .138 | .15 | .163 | .175 | .188 |
| 3/10 | 5.3 | .066 | .08 | .093 | .106 | .119 | .133 | .146 | .159 | .172 | .186 | .199 |
| 4/10 | 5.8 | .073 | .087 | .102 | .116 | .131 | .145 | .16 | .174 | .189 | .203 | .218 |
| 2/8 | 5.3 | .066 | .08 | .093 | .106 | .119 | .133 | .146 | .159 | .172 | .186 | .199 |
| 3/8 | 5.7 | .071 | .085 | .10 | .114 | .128 | .143 | .157 | .171 | .185 | .20 | .214 |
| 2/6 | 5.7 | .071 | .085 | .10 | .114 | .128 | .143 | .157 | .171 | .185 | .20 | .214 |
| 3/6 | 6.3 | .079 | .095 | .11 | .126 | .142 | .158 | .173 | .189 | .206 | .221 | .236 |
| 2/4 | 6.7 | .084 | .101 | .117 | .134 | .151 | .168 | .184 | .201 | .218 | .235 | .251 |
| 3/4 | 7.5 | .091 | .11 | .128 | .146 | .164 | .183 | .201 | .219 | .237 | .256 | .274 |

E-101-B

LABOR: Includes preparation, drilling, cutting, strapping and connecting to boxes. No taps or excavating.)

10-56



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# MORE BUILDERS INSTALL STA-BRITE

## here's why...

1 **Complete selection.** Sta-Brite offers a complete line of fluorescent fixtures, offers a model for every need, will design special models to meet unusual requirements.

2 **Highest quality.** Sta-Brite manufactures from heavy-gauge steel, bonderizes fixtures to withstand rigorous climate conditions. Sta-Brite guarantees fixtures for *two* years!

3 **Fast service.** Sta-Brite creates good will among builders by delivering on time as specified from Sta-Brite's strategically located Southern plant!

4 **Engineering service.** Sta-Brite has a complete engineering department with free consulting service to architects and your customers.

It will pay you to take a closer look at the Sta-Brite line to land more sales in all fields. Sta-Brite does not compete with distributors and dealers, does not sell direct, refers leads in your area to *you!*

Sta-Brite's "**Schoolite,**" designed for *all* institutions. Heavy-gauge die-formed steel, Sta-Brite chip-proof ETL-tested baked enamel. Completely wired with lead lag, parallel U.L. and ETL approved ballasts.

S-B-3

STA-BRITE
*Fluorescent Manufacturing Company*

Sta-Brite Fluorescent Manufacturing Company
3550 N.W. 49th Street, Miami 42, Fla.

Please send me catalogue and complete information on Sta-Brite.

Name .....

Address .....

City & State .....

6 POWERFUL REASONS WHY THOUSANDS ARE SWITCHING TO...

Plymouth PLASTIC *Electrical* TAPE

tougher

more protection

faster

practical

economical

neater

Sold Only Through Recognized Wholesalers

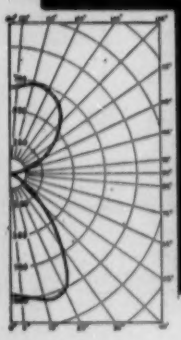
**PLYMOUTH RUBBER COMPANY, INC.**

Manufacturers of SLIPKNOT — The World's Largest Selling Friction Tape

Canton, Mass.



**CERTIFIED 45° x 45° SHIELDING FOR SCHOOL LIGHTING**



Here is a fixture not only pleasing to the eye with a 45° x 45° shielding angle, but it has all the qualities of SOUTHERN'S best in design and construction. Can be wired with regular, rapid start, and slimline ballasts. These 2 lite, 4 and 8 foot fixtures are constructed of heavy guage cold rolled steel, designed for either surface (ceiling) or suspension (stem) mounting. The modern designed louvers are securely attached to the "V" type reflector forming one unit, and may be lowered from either side without the use of tools. This SCHOOLITE fixture may be joined in continuous rows without additional parts.



Remember, specify and satisfy with SOUTHERN fluorescent fixtures.

**SOUTHERN LIGHTING MFG. CO.**
503 ELWELL ST. — ORLANDO, FLORIDA

13 - 55

# *"I chose the* THERMADOR"

"Seven Leagues Ahead" in the science of bilt-in and portable electric heating

Here's the end result—the final customer choice of brand. And that's where **THERMADOR** means profits for you! **THERMADOR** electric bilt-in and portable heaters give customers the widest choice of models whether the need is for large rooms or small areas. Just a flick of the switch delivers instant, clean, safe, odorless warmth. Scientifically designed heating element, fan and louvers direct the heat toward the floor. From there it rises, warming the "Living Zone"... quickly, safely, economically. Manual and thermostat models, the fastest heaters made. Ideal for any room in the house, office, shop or factory.

**THERMADOR Electrical Manufacturing Co.**

*A Division of Norris-Thermador Corporation*

**5119 DISTRICT BLVD., LOS ANGELES 22, CALIFORNIA**

Manufacturers of Bilt-in Electric Ranges, Bilt-in Electric Refrigerator-Freezer, Evaporative Coolers, Ventilating Fans

2-1104

## Thermador Electric Heaters *are safe, quiet, dependable.*

**MODEL MHF** does double duty—heats when needed, but with heating element turned off, the noiseless fan completely circulates air at high speed. Easily carried anywhere. Heavy duty cord and plug. Automatic reset overheat switch. Available in manual or thermostat models. 3000 to 4600 watts, 240 volts. In rich, marbelized bronze finish.

**MODEL HF** also has two-fold use—warmth in winter, cool air circulation in summer. It's a potent, powerful, fully automatic model, the original fan-type heater. Available in manual or thermostat models. Enclosed sides and safety grille make it completely safe for any room—no danger to children. Convenient finger-lift handle, solid chrome plated rod base. Sienna Brown or White Baked Enamel finish.

**MODEL W**—durable steel construction. Heats in winter, cools in summer. Almost any wall can be utilized for installation. Separate switches for fan or heat. Heavy duty single phase induction motor, free of television and radio interference. Newly designed 25 amp bilt-in thermostat is sensitive and accurate, assures uniform temperature. Sun Bronze, baked enamel finish—from 2500 to 4500 watts, 240 volts.

**MODEL B** (stainless steel, bronze or white)—1650 watts, 120-240 volts.

For head to heels comfort **MODEL LR** Radiant Heater can't be equalled. This is the most popular bathroom wall heater in America. Low cost, installed quickly and inexpensively, built for years of dependable service. **MODEL RB** designed for smaller bathrooms and dressing rooms. Life-time stainless steel finish. RB uses 120-240 volts, 1000 to 1500 watts. LR—120-240 volts, 1650 to 2000 watts.

**MODEL LP** Longfella gives quick, safe, instant heat for homes, offices and stores. Lightweight, easy to carry. Head to heels design provides overall comfort with a minimum of floor space—truly the heater of a thousand uses. Lustrous hammertone Sun Bronze baked enamel finish.

Thermador Electrical Manufacturing Company, Dept. ES-1056
A Division of Norris-Thermador Corporation
5119 District Blvd., Los Angeles 22, California

Name _____

Address _____

City _____ Zone _____ State _____

Look!

# No Sealing Ring required!

**New, Revolutionary SOCKET METER TROUGH Design by B & C**

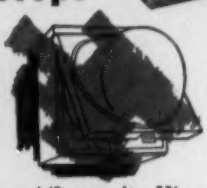
**Completely Eliminates Extra Cost and Installation Bother of the Sealing Ring**

Available in steel or aluminum . . . single sockets or gang units for both vertical and horizontal mounting . . . with or without buses and disconnects . . . 5th and 6th terminals available.

Patents Pending

## Only 3 Quick Installation Steps

1. Insert meter in jaws!
2. Place cover over meter and under top head!
3. Swing bottom latch over cover tab and seal!



All terminals are 4/0 capacity Hinge-Type, high strength copper. The unique PRESSURE PLATE design is adjustable from #8 wire size to 4/0 cable. The 45° angle of the terminal lugs eliminate sharp bends of the wire. The Hinge feature provides simple, easy conductor entrance and maximum connection security.

Positive corrosion protection . . . grey hammertone enamel is baked on over special chemical coatings for both steel and aluminum enclosures.

## Simplified Construction!

- ★ Completely Weatherproof!
- ★ Easier to Install and Maintain!
- ★ Unexcelled Performance!
- ★ Ample Knockouts!

This new B&C design is undoubtedly the finest METER TROUGH ever made . . . it truly deserves your most careful consideration for any type of installation. One of the big features is *plenty of wiring space* . . . the single units are 8" x 8" x 3½" . . . the multiple units are on 8" centers both horizontally and vertically. All conduit hubs are interchangeable on standard openings of 1¼", 1½", and 2" and 2½". Interchangeable 1" openings are available if required. Hubs may be ordered separately.

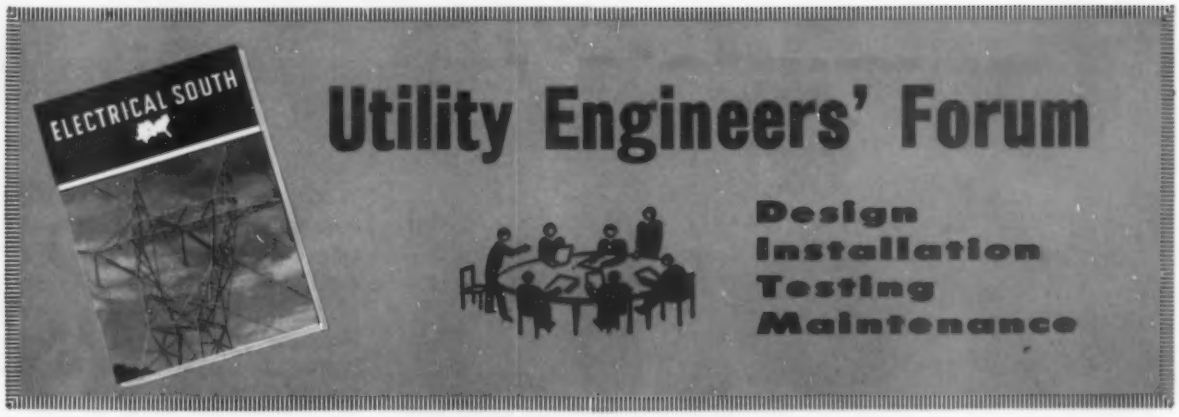
***Write for descriptive catalog containing installation data and price list.***

B and C

*Your Seal of Dependability and Safety*

**METAL STAMPING COMPANY**

590 MEANS ST., N. W. • ATLANTA, GEORGIA




# Testing photo-sensitive controls

**This new calibration equipment for testing photo-sensitive street light controls features lamps operated at full voltage with light controlled by a novel venetian blind arrangement.**

**By Raymond C. Ashe, Supv., Meter Laboratory, Georgia Power Co., Atlanta, Ga.**

◆ THE METER laboratory of the Georgia Power Company has recently conducted extensive tests to determine the best methods for testing photo-sensitive street light controls. The results of these tests have been incorporated in the construction of new calibration equipment which has recently been completed. This equipment contains a number of improvements over previously used apparatus and has at least one feature which is believed to be the first of its type.

It was found in tests that the photo-sensitive tube in the controls would perform most efficiently when the color temperature of the light source was 3700 degrees K, which is approximately the average color temperature of the North Sky. This color was duplicated in our calibration equipment by using PAR-38, 150 watt flood lamps with light blue filters and then providing several stages of filtering and diffusing. The flood lamps operate at full voltage and, hence, constant color temperature. When the lamp voltage is varied in order to vary the light source then undesirable red light rays are emitted. We have, therefore, constructed venetian blind arrangements which are capable of varying the light from zero to full light.

The basic unit in the equipment is the photo cell and meter which is calibrated in foot-candles. This unit forms the standard of the calibration box. The cell is placed permanently in the box in a relative position to a set of jaws wherein is placed the unit under test and in such a position that the

*(Continued on page 132)*

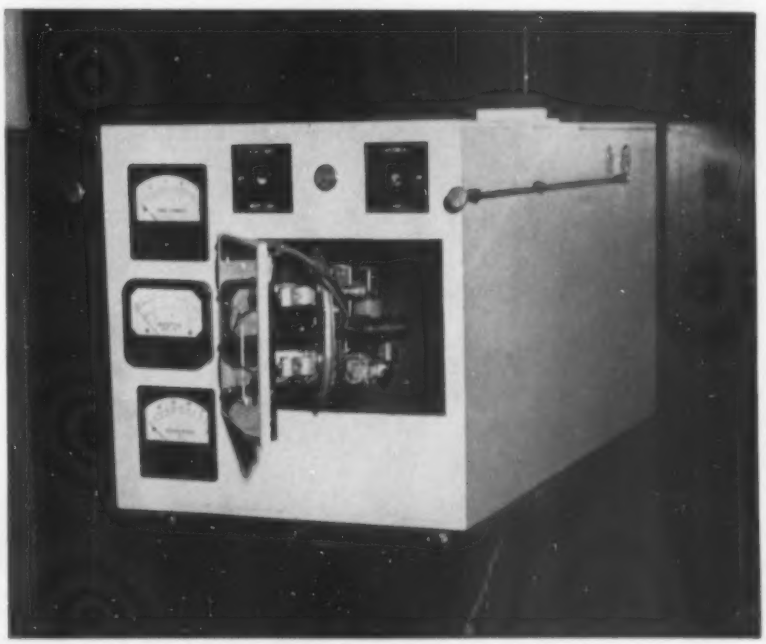


**Photo-sensitive control calibration equipment, Georgia Power Co., showing control in place for testing and with tube jacks used to insert a micro-ammeter and voltmeter into circuit.**

# Knoxville's new meter

**At top, dispatching room of Knoxville's new meter building contains a quick reference file on the two desks which holds cards on 2,500 customers who have asked for service. At bottom, C. R. Wardell examines new portable meter racks designed by Knoxville Meter Dept. Note how easily meters slip in and out with one hand.**

**With a new modern building boasting latest design automatic test boards, a streamlined record system, and a large fleet of meter installation trucks with two-way radio, the Knoxville Meter Department expects to provide efficient service.**

**By C. R. Wardell, Supt., Electric Meters, Knoxville Utilities Board, Knoxville, Tenn.**

◆ RECENTLY, the Electric Meter Department of Knoxville Utilities Board moved into its spacious new building with latest design equipment and facilities. Actual meter shop working and storage space comprise about 7,000 of the 20,000 square feet of floor space; the rest of the space including superintendent's office, dispatcher's office, assembly or meeting room, record room, receiving and shipping room, shower room, store room, and recreation room.

Electric service for the building is fed from a 4-wire wye bank of transformers, through a 1600 ampere breaker and bus duct. A 5-wire delta, from another bank of transformers used for test purposes, makes it necessary to have nine service wires to feed the building, and this gives most any voltage obtainable from a bank of transformers. The lighting level throughout the building is about 75 foot-candles.

There are ten meter installation trucks, all equipped with two-way radio. These trucks install, exchange, and maintain the 74,894 meters in the five counties served by Knoxville Utilities Board. There are also eight automobiles used for tests and other customer services.

### Automatic test boards

Four of the latest automatic test boards on the market have been added. These test boards are two position and have three standard meters. When the test is completed, you push the sequence key and read the results of "Full Load"

# building

test on one standard, the "Power Factor" test on another, and the "Light Load" accuracy on a third.

This frees the operator for other duties while the test is going on. He may use this time to prepare another meter for test in the second test position on the panel, so that upon completing the test of the first meter he need only throw a switch to start the test on the second meter.

The meter record room boasts electric elevator files which are compact and cover very little floor space, each file having an approximate capacity of 20,000. A person sitting at the work table between two files has access to approximately 40,000 records at arm's length. One set of files consists of about 75,000 customer addresses, and the other set consists of approximately 84,000 meter history records.

### Quick reference file

The dispatching room has a quick reference file on the two desks which hold cards on approximately 2,500 customers who have asked for service. Information such as name, address, customer load, transformer size and number, type of business, order received, wiring OK, requires extension "Yes" or "No", job complete, and others, are necessary to be able to answer any question the customer might ask regarding when he will get service. Transferring a customer to several departments to get the information he wants means bad public relations.

Gas is used for the building heating and air conditioning. The heating is done in a conventional way, but the air conditioning is somewhat more complicated. Two 25-ton absorbers (no moving parts) are used, fed by steam, which produces chilled water at 42° F., which is circulated through cooling coils. By moving air through these coils, we get our air conditioning. As far as I know, there are very few of these machines in this part of the country.

Surrounding the building, approximately 27,000 square feet of

*(Continued on page 130)*

**At top, Knoxville's new meter building contains 20,000 sq. ft. of floor space, of which about 7,000 sq. ft. are actual meter shop space. Center, the new automatic test boards are two position and have three standard meters. These automatic boards free operator for other duties while test is going on. At bottom, a full view of the new meter shop which is reported to be one of the most modern in the nation.**

# SORGEL is the Name to Remember

**When planning electrical distribution in industrial, commercial, and institutional buildings, keep in mind SORGEL dry-type transformers**

## *Big savings . . .*

can be made in the original installation cost by transmitting electric power and lighting current at higher voltages to load centers, then stepping it down to the utilization voltage with Sorgel dry-type transformers.

**SORGEL transformers** are so compact that they do not require much space, and can be installed in most any convenient or out-of-the-way place inside of buildings. They do not require fire-proof vaults nor enclosures.

**SORGEL dry-type transformers** are so quiet in operation that they are particularly adaptable for indoor installations — in hospitals, libraries, schools, institutions, office buildings, stores, and other structures where low sound levels are an important factor.

**INCREASED EFFICIENCY** — Installation close to the load centers results in shorter feeders, better voltage regulation, more efficient distribution, and lower wiring cost.

**SAFE, LOW OPERATING TEMPERATURE.**

**LIBERAL DESIGN**—Can safely carry an overload during an emergency.

**EASY INSTALLATION** — Attached mounting brackets.

**EASY CONNECTING** — Roomy connection compartment with solderless terminals.

**LONG LIFE** — Thermo-vacuum impregnated windings brazed to terminals.

**UNDERWRITERS' APPROVED** — SORGEL dry-type transformers are Underwriters' approved in all ratings covered by the Underwriters' Re-examination Service, both single phase and 3-phase.

## *A Perfect Partner for Substations*

**SORGEL transformers,** either dry-type or Askarel-cooled, can also be incorporated in substations, complete with primary and secondary switchgear. They are procurable with any make of switchgear, and from any substation manufacturer.

**SORGEL TRANSFORMERS**

*Also Saturable Reactors and Special Transformers*

*Sales Engineers in Principal Cities*

**SORGEL ELECTRIC CO., 835 West National Ave., Milwaukee 4, Wisconsin**

*40 years' experience in the development, manufacturing and application of transformers*

# NEW DESIGN BEEFS UP DERRICK, CUTS DOWN WEIGHT

We made this new derrick with legs to please you. Fabricated and rectangular, they weigh 20 percent less than most side legs, yet they're about 25 percent stronger. The "bow-legged" shape keeps the cargo area open.

This derrick lifts 8000 pounds (has been tested at 14,000 pounds), body-loads 2,500 pounds, handles 65-foot poles. Operating range is 195°, and live-boom action gives you infinite lifting positions with a single-drum winch. *Like other Holan derricks, this one fits any body on its own supports. There is no need to rebuild or reinforce the body proper.*

There's much more to tell, so write us and ask about the Series 6700 Power Derrick.

Series 6700 Derrick mounted on Holan CLC-138 Construction Body. Notice new Holan corner window design for crew compartments.

All Holan bodies are made of hi-tensile, rust-resistant steel 20 to 25% lighter than ordinary steels.

Line construction bodies for light to heavy-duty. Crew compartments optional. Efficient tool compartments and drawers.

Service bodies for chassis up to 1½ ton. Lengths, 72", 84" and 102".

Aerial arm for spotting workmen 37 feet above ground, 9 feet below ground level. Double-basket unit extends 45 feet. Rotates 360°.

Live-boom, three-legged derrick lifts 12,000 lbs., 75-foot poles. Body-loads 5,000 lbs.

Mechanical Ladders expertly engineered and counterbalanced for effortless handling. Maximum heights from 24' to 32'. Swings 360°; angles to 72°.

Portable hydraulic and mechanical earth borers. Augers for 8" to 20" diameters, depth to 8'.

Hydraulic jacks, controlled from rear of truck. Rigid mounted or patented Holan self-stowing types.

Live-boom, two-legged derrick with fabricated, rectangular side legs—"bow-legged" design. Lifts 8000 lbs., 65-foot poles.

Live-boom, two-legged derrick with automatic hydraulic side-leg coupling. Lifts 6000 lbs., 70-foot poles.

Ladders to 40' with all phases completely hydraulic. Pump actuated by P.T.O. or separate engine drive with electric starter.

Hydraulic towers with rotary, stationary, or transverse platforms. Exclusive box-girder telescoping mast.

J.H. HOLAN® CORPORATION

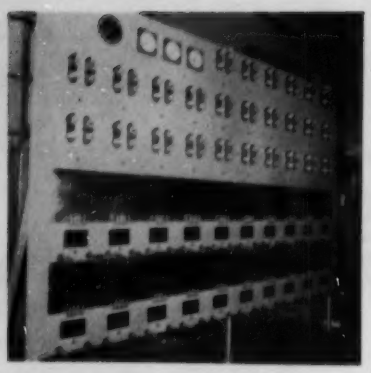
4100 WEST 150TH STREET
CLEVELAND 11 OHIO

OTHER PLANTS

HOLAN CORPORATION OF GEORGIA, Griffin, Ga. • J. H. HOLAN CORP., Phoenix Div., Arizona
BRANTFORD-HOLAN LIMITED, Brantford, Ontario

THE NAME THAT MEANS WORK SIMPLIFICATION

# Changeout method for



Time-run board for checking registers after meters are tested and ready to go back into service.

This truck is loaded with the meter-gard carriers (4 in a pack), 9 carriers on each side of the truck—72 meters in all with room to work in the center.

**For the required periodical testing of single phase watt-hour meters, the Anderson Branch of Duke Power Company uses the change out system instead of testing meters in service. Polyphase watt-hour meters are tested without interruption of service.**

**By H. B. Edmonds, Meter Department, Anderson Branch, Duke Power Co., Anderson, S. C.**

◆ THE METER serves as the cash register of the utilities, and in 1953 it was time to start our periodical testing on single phase watt-hour meters. The Public Utilities Commission of South Carolina requires single phase watt-hour meters to be tested every 100 months, self-contained polyphase meters to be tested every two and one-half years, and meters with instrument transformers to be tested every two years.

We decided to use the change out system on all single phase meters instead of testing them in service; however, a meter installed less than a year would not be changed. By this system of working in the shop a better job can be accomplished on the meters, and the work is faster. The meters receive a thorough going over, the high pot test is given, and the registers are cleaned and set back, painted, rejeweled, and tested for accuracy. We discard the obsolete meters.

### Time run board

Afterwards the meters are placed on a time run board for a register check. The meters are packed in an aluminum meter-gard carrier, four in a pack. These meter-gards are light in weight with flanged tops and recessed bases, permitting snug stacking to conserve space in storage and in service trucks.

The men engaged in the change out job paint the meter boxes and sockets, if necessary, and check all connections to determine whether any previous connections have been made with the meters.

When the register is set back it is left reading 9997 (if it does not have a multiplier), and when it is time run it will read zero.

The change work orders correspond with the meter reading route. The change orders are made in the office in duplicate form, one for the billing department and the

This is meter man changing the meters as part of changeout plan. The meter on the left is the master meter and the meter on the right is for water heater.

This meter installation is a 3-phase, 4-wire, using wall mounting bracket for the C.T.'s. Meter cable is installed in conduit from C.T.'s to the meter box.

Typical apartment house meter installation—meter on the left for lights; center meter for air conditioning, cooking and lighting; meter on right for water heater.

BRANTFORD-HOLAN LIMITED, Brantford, Ontario
THE NAME THAT MEANS WORK SIMPLIFICATION

Exclusive box-girder telescoping mast.

# periodic meter tests

other for the meter department. The customer's name, address, account number, and all the present meter information, except the meter reading, are given. Thus the man changing the meters will merely have to check the order and see what type, size and volts of meter he will need, read the old meter and fill in the new meter information.

In the out-of-town district we deliver a certain number of meters and work orders each month to be changed. In this way the district men can change the meters without extra expense to the company.

We do complaint and special testing in service on single phase watt-hour meters.

When changing out meters on a route and men are reading meters in the area where the change is being made, it is a good idea to change to another location on this route for about a half day and then return to the place where the men were reading, for this system will prevent confusion in the billing department.

The change orders go to the billing department each day.

### Polyphase meter tests

We test all polyphase watt-hour meters in service. The state requires that these meters receive testing two years and two and one-half years, but we make the test more often. Some have demand registers and need more care.

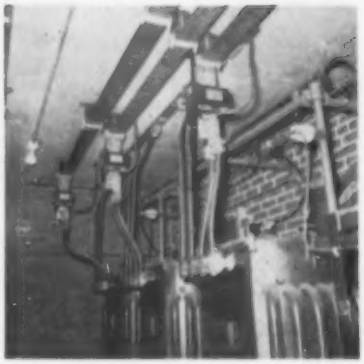
All our polyphase watt-hour meters are three-phase three-wire and three-phase four-wye "A" type. The three-phase four-wire delta meters are socket type, and some of the polyphase meters have demand registers. We have test blocks on all the self-contained meter installations so the meter can be tested or changed without the interruption of the customer's service.

On the meter installations with current and potential transformers or only current transformers test blocks are also installed. If the meter is inside the building and a self contained meter is used, a meter connection cabinet with a by-pass test block is installed.

When it is outside the building, we employ outdoor polyphase meter box with the same type of by-pass test block, and if the meter is inside the building with current transformers we make use of an indoor transformer cabinet. If the meter is outside of the building we use transformer mounting wall bracket and run meter cable in conduit to the meter box.

Where we have a transformer vault, the current transformers are installed in the vault, and the meter is placed on the outside of the vault and the meter cable run

*(Continued on page 129)*



**Some of the larger installations are metered with current transformers on bus bars in vault.**

**This installation for apartment building, 6 apartments. The meters on the top row for lights and cooking, one meter for house lights. The bottom row of meters for water heaters with weather proof, dead front, pull out switch.**

**Meter installation using an instrument transformer box; meter cable in conduit to the meter box.**

**Indoor meter cabinet with by-pass test block. This is a 3-phase, 4-wire meter installation.**

**Meter installation consisting of self-contained meter with a 6-pole by-pass test block.**

# Determining transformer loads

**A small number of tests to get relationship between kwhr and kva peak will replace the time consuming, expensive practice of installing measuring devices at every suspected overload location.**

**By Nick Newton, Division Meter Superintendent, Ozark Division, Arkansas Power and Light Co., Harrison, Ark.**

◆ A NEW APPROACH to the determination of transformer loading is currently being practiced by the Arkansas Power & Light Company. Instead of the time consuming and expensive practice of installing measuring devices at all locations where overloading is suspected, a method has been worked out whereby only a comparatively small number of transformers in service receive physical tests; and calculations from these tests are used with very desirable results to reflect the load picture as a whole.

At the present time two different types of tests are being made, and though they are closely related, each test serves a different purpose.

One of these tests is concerned strictly with arriving at load factors, and keeping them up to date. These load factors, when determined, are given to personnel in charge of machine accounting, and play a vital role in converting kwhr consumption to kva by this method. Statistical load checking by machine accounting methods is a story all its own, and due to space and time limitations cannot be covered here. Suffice is to say that it is vitally important to the new procedure of transformer load determination.

Load factors are determined by measuring kva on a selected group of transformers each year, and comparing the result with the kwhr consumption of all the customers served from these transformers over the same period of time. Since temperature has a very definite effect on both kwhr consumption and kva demand, it also must be considered in the determination of load factors, and enters the picture in the form of "degree days."

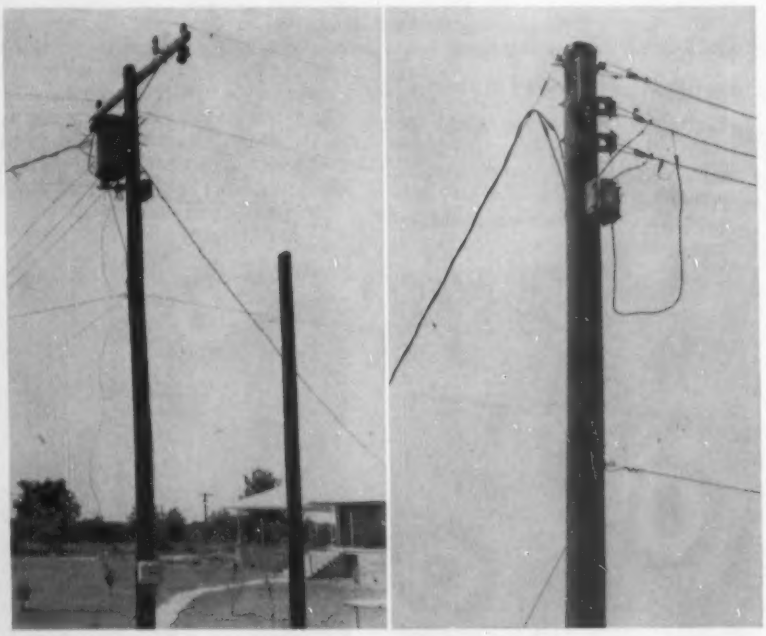
Degree days, as used in the load factor calculations, are the sum of the number of degrees above ninety degrees, times one day each day the temperature exceeds ninety degrees. For example, three days with temperatures of ninety-five degrees, ninety-six degrees, and ninety-seven degrees, would equal to eighteen degree days.

This test is made each year, as mentioned earlier, at selected transformer locations, using instruments known as maximeters. Maximeters are simply variable tap, through type, current transformers, with the secondary winding connected to a thermally operated indicating device with a graduated scale, and two pointer type indicators; one indicator reflecting existing load, and the other, mounted on the same shaft, and possessing a friction device, is pushed by the first; subsequently indicating peak registration in amps when multiplied by the tap ratio.

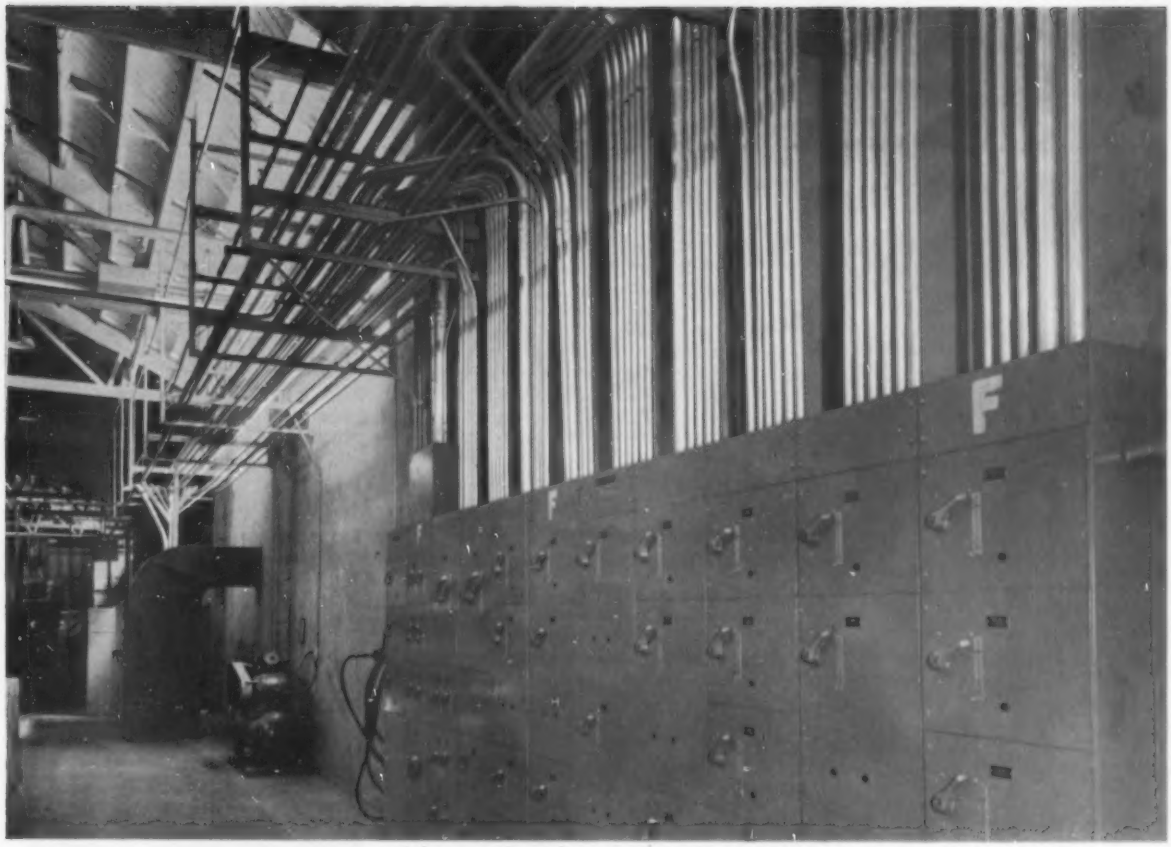
The testing is done in all divisions of the company, and final load factors are computed from correlation of all tests, which reflects the state wide picture.

These tests, and resulting load factor curves, have proved helpful in keeping abreast of the continually changing customer load picture; resulting in up to date load factor curves, and also to reflect any possible changes, or errors, in computed load factors from previous tests.

*(Continued on page 130)*



**Typical instrument installation for checking peak loads during the hottest summer months. Recording ammeters and voltmeters with 28-day charts are installed at transformer and a recording voltmeter is also installed at end of secondary served from transformer.**



One of three panels guiding power to a carton-making machine installed at the South Gate, California plant of Fibreboard Products, Inc. Rome•RIGID conduit gives complete protection against mechanical and chemical injury to the machine's wiring.

# Easiest installation ...Why you get it with Rome•RIGID

The fishing's easy when you're pulling cable through Rome•RIGID conduit.

We go to great lengths in order to give you conduit that combines utmost protection with high-speed installation.

***Inside story.*** Burrs, flashing, rust, and similar imperfections inside the conduit you use can raise havoc with your wire or cable.

To avoid imperfections like these from the very start, we make Rome•RIGID of hot-rolled sheet steel, shot-blasted on both sides. Unlike the "skelp" in ordinary conduit, this steel shows no heavy mill scale or pitting.

***Cold formed for strength and uniformity.*** We cold form Rome•RIGID to avoid the oxidation and scale often found on hot formed pipe. Result: You get conduit with faultless finish, of uniform wall thickness and strength. Rome•RIGID is the only cold formed conduit.

***Electric welding.*** We alone use electric resistance welding for conduit, the same method used to weld tubing for high-pressure boilers.

***Clean, corrosion-resistant surface.*** Most important of all is the superior resistance to corrosion you get with Rome•RIGID. It's the only rigid steel conduit hot-dip galvanized by Armco's patented Sendzimir process . . . This method's painstaking control of temperature and atmosphere results in a uniformly fine surface and easy bending.

Rome•RIGID is the cleanest conduit you can buy. It's easier to install, easier to fish, easier to maintain when your wiring is completed. Prove these facts to yourself on your very next conduit installation.

*It Costs Less to Buy the Best*

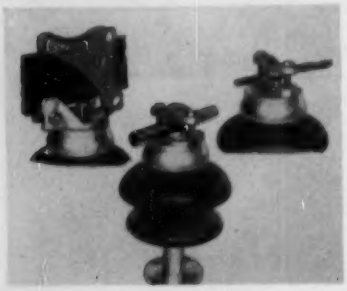
ROME CABLE Corporation
ROME · NEW YORK
and
TORRANCE · CALIFORNIA

# Notes on new utility equipment

## Outdoor bus support clamps and fittings

A NEW LINE of outdoor bus support clamps and fittings for use with cable, tubing, or bus bar is being manufactured by Line Material Co., 700 W. Michigan St., Milwaukee 1, Wis. The clamps are available for either 3-inch bolt circle, standard strength or 5-inch bolt circle, high strength insulator mounting. These clamps offer economy, provide high grip strength, and facilitate installation.

L-M's new clamp line accommodates cables from No. 1 to 2000 Mcm,



tubing from ½ to 2½ inches ips, and bus bars from 2 to 6 inches wide. The entire range of cable sizes can be handled by a clamp consisting of two similar parts; thus, only one part need be stocked for all cable support requirements. For supporting tubing or bus bar, clamps are provided with slotted mounting holes, allowing convenient angular adjustment to assure proper alignment of clamp and conductor.

Clamps can be furnished all ferrous, half ferrous and half bronze, or all bronze. They can be mounted upright or inverted on cap and pin or station post insulators.

*For additional data, ask for item U1001, using the coupon on page 84.*

## Expanded scale voltmeters offer greater readability

PHAOSTRON Instrument and Electronic Co., 151 Pasadena Ave., South Pasadena, Calif., announces the manufacture of a new line of expanded scale voltmeters. There are many applications where the reading advantages of these expanded scale meters will enhance equipment with up to 10 times greater readability for greatly increased accuracy. Phaostron can supply these expanded scale voltmeters either a-c or d-c. They can be obtained in a wide variety of ranges and case styles for specified requirements. The a-c movements have wide frequency ranges, good linearity and true rms readings.

The Phaostron custom panel meter with expanded scale 90 to 130 volt a-c rms was designed for line voltage measurements and are available in nine case styles at Parts distributors. The section of the scale needed most has been expanded and that section under 90 volts, which is rarely used, has been greatly reduced.

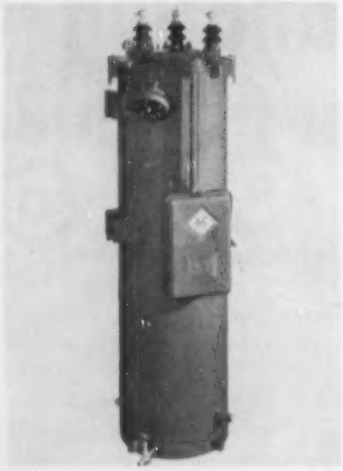
*For additional data, ask for item U1002, using the coupon on page 84.*

## External adjustment for distribution regulators

EXTERNAL "Vari-Amp" adjustment, long a feature of Allis-Chalmers single-phase power regulators, is now available for its distribution regulators, according to an announcement by G. W. Clothier, manager of the firm's transformer department, Milwaukee 1, Wis.

This exclusive, easy-to-adjust feature has been developed as an adapter which can be placed on new units or on those already in use. The adjustment can be made with a screw driver without removing the regu lator from service.

The "Vari-Amp" feature makes it possible to obtain 25 regulating com-



binations in five current ranges. It increases the load carrying capability to 160 per cent or 400 amperes maximum depending on the size of the regulator. With the "Vari-Amp" adjustment, it is no longer necessary to shift regulators from one substation to another immediately to provide for increasing loads.

Features of the indicator are reflective numerals, external resettable maximum and minimum drag pointers, maximum and minimum pointers, and position numbers of different colors for easy identification and readability.

*For additional data, ask for item U1003, using the coupon on page 84.*

## Dead end connectors with built-in adjustability

THE FIRST compression dead ends for A.C.S.R. and all aluminum conductors with built-in adjustability have been introduced by The Thomas & Betts Co., Elizabeth, N. J. With the new feature of adjustability linemen now can adjust conductor sag to specification after the strain connection is completed.

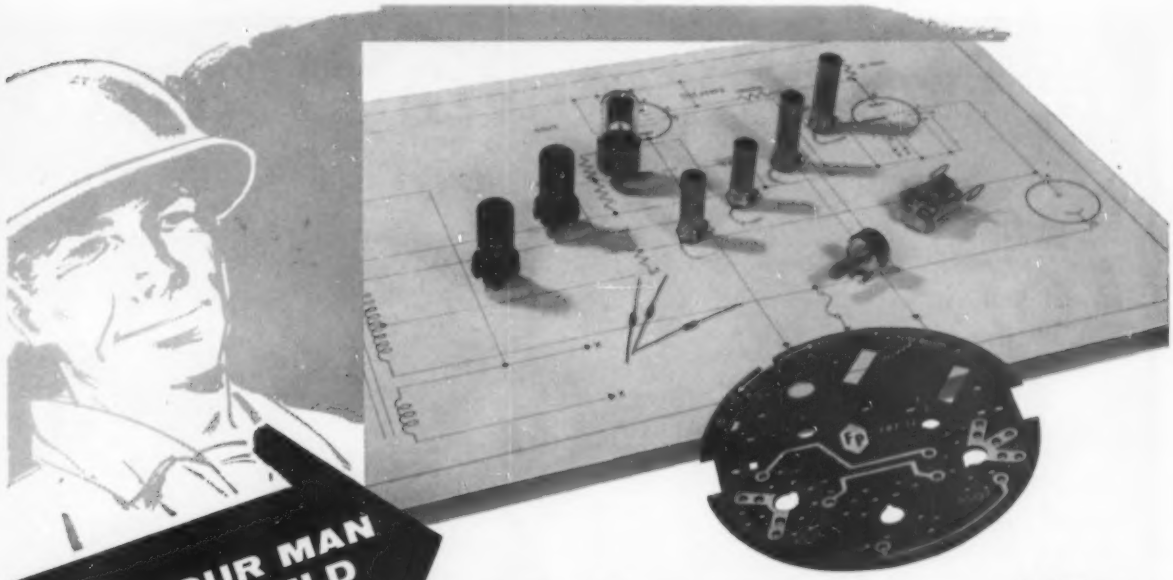
The positive means of adjusting sag in transmission line construction

makes the new dead ends especially useful for river crossings and over rough terrain. Where cables are "bundled," the adjustment also achieves completely uniform sag in all conductors.

The new dead end provides 4 inches of adjustment; additional adjustment, however, can be supplied. The sag adjustment possible varies, of course, with conductor size and line construction. Typical of the sag adjustment available is that possible in a 700 foot span of 795,000 cm (26 x 7) A.C.S.R. sagged at 50 per cent of ultimate strength. In this construction 1 inch adjustment of the dead end clevis provides 1 foot of sag adjustment.

At assembly the A.C.S.R. is pulled through the dead end body, and its steel strands are then compressed in a steel sleeve that is integral with an adjusting stud. The dead end body is then threaded on the stud as far as the first of two lock nuts and locked in place.

Sag is adjusted by loosening the rear locknut, turning the dead end's "U" shaped clevis to take up or pay out sag and retightening the locknut. The clevis can be turned while assembled to the insulator string where



**ASK YOUR MAN IN THE FIELD ABOUT THE**

# component quality

## OF FISHER-PIERCE

### PHOTOELECTRIC LIGHTING CONTROLS

A look inside any Fisher-Pierce photoelectric lighting control immediately reveals a primary reason why they require extremely low maintenance and provide long-run economy: *component quality.* Here are specific examples: two *pre-aged* amplifier tubes, instead of one dual triode, for a guaranteed minimum life of 20,000 hours; *wire wound* potentiometer; *Sigma* sensitive relay for low plate current drain of power tube; *linen-based bakelite* sub-mounting chassis and etched circuitry; *metal encased* paper capacitors (no electrolytics); blue-sensitive 1P39 phototube with non-hygroscopic base. No other photoelectric control provides such consistently high component quality. Combined with this are these four other important features:

**DESIGN ADVANTAGES** — Can be installed, serviced or removed safely and easily • Wide mounting versatility and orientation *after* bracket installation.

**PROTECTION** — From surges and lightning, by linen-based bakelite sub-mounting chassis and proper component spacing Circuit and load fuses, and lightning arrestor • Fail-safe operation.

**ADAPTABILITY** — Three basic series and numerous models for all mounting requirements, operating voltages, load capacities and desired contact arrangements.

**DEPENDABILITY** — Proven by the thousands of F-P controls used by hundreds of utilities, over the past ten years.

*Complete specifications and operating data are contained in informative F-P Bulletins, available on request. Or call the Fisher-Pierce sales representative in your area, for point-by-point proof of F-P superiority.*

**THE FISHER-PIERCE CO., INC.**

59 Pearl Street, So. Braintree, Boston 85, Mass.

ELECTRICAL SOUTH
806 Peachtree St., N.E.
Atlanta 8, Ga.

October, 1956

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IT PAYS TO HAVE HUBBELL GOOD CONNECTIONS
CUTS WIRING TIME 1/3!
NEW SUPER
Twist-Lock®
with Dead Front
CAT. NO. 3323
3-Wire 20 amps. 250 volts (AC or DC)
10 amps. 600 volts (AC only)
Features exclusive screwless PRESSURE GRIP terminals for faster, easier SAFER wiring. No more fussy wire bending or looping. Wire terminals are "locked in", providing a positive, pull-proof connection. Now available in 2, 3 and 4-wire sizes.
Interchangeable With Regular Twist-Lock Units
CAT. NO. 3321
Read all about it . . . write for new folder.
ACT NOW
DEPT. R-2
HARVEY HUBBELL, INC.
BRIDGEPORT 2, CONNECTICUT

**HERE'S WHAT WELDERS SAY:**

"Easier to handle. It's so light and flexible I don't get the usual 'drag.' A cinch to handle in cramped quarters."

"I get easier grip. The *fluted* jacket does it. U. S. Royal Gold coils easily, resists kinks and tangles."

"Easier to see because of the bright yellow color. I don't trip over it. And I can easily tell it from the black cable whenever I have to use *two* cables on the machine."

"The *fluted* jacket has a greater surface area. That makes the cable cooler to handle, because heat is dissipated quicker."

**HERE'S WHAT PURCHASING AGENTS SAY:**

**"Longer service life.** U. S. Royal Gold is so flexible we get fewer terminal connection failures. Maintenance costs go down, replacements are few and far between."

**"Superior impact resistance.** Tests show that U. S. Royal Gold Fluted Welding Cable possesses greater resistance to impact. It shows up on my cost sheets."

**"Lower accident insurance charges.** U. S. Royal's bright yellow color catches everyone's eye. It also keeps workmen from running vehicles over it or dropping equipment on it. Result: U. S. Royal Gold lasts even longer."

**"It has high resistance to moisture**—60% natural rubber jacket and 60% natural rubber insulation."

Get U. S. Royal Gold at electrical supply houses or write to us at Rockefeller Center, New York 20, N. Y.

US RUBBER

Electrical Wire & Cable Department

**United States Rubber**

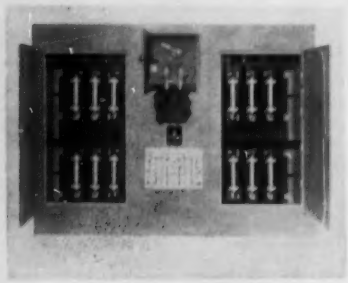
the insulator has a bill type connecting stud.

*For additional data, ask for item U1004, using the coupon on page 84.*

## New fuse-switch unit provides flexibility

A NEW fuse-switch metal enclosed unit for industrial high voltage distribution centers, providing flexibility for 2 feeds and 4 loads, is available from G&W Electric Specialty Co., 7780 Dante Ave., Chicago 19, Ill.

The full 400 ampere load break oil switch has three sets of manually op-



erated links. Normally the upper set of links are open and two loads are supplied from each feeder separately. By opening either set of lower links and closing the upper links, all four loads can be supplied by either feeder. Type "SCRA" is rated 5000 volts, with high interrupting capacity power fuses. Similar units are available in 15,000 volt rating.

*For additional data, ask for item U1005, using the coupon on page 84.*

## Air interrupter switch for modern protection

A NEW, high voltage, air interrupter switch, manufactured by the Continental Electric Equipment Co., 205 W. Fourth St., Cincinnati, Ohio, provides vital protection and completely safe interruption at moderate cost. The unit functions as an air break disconnect with continuous and interrupting ratings to 600 amperes at 15 kv.

Designed to be safely opened under load, the Continental switch will interrupt all currents to its continuous rating. Three front-operated 3-pole types are available: single throw, non-fused, wall-mounted; single throw, fusible, free-standing; double throw, fused or non-fused, free-standing.

The compact, rugged units are easily installed, indoors or outdoors—free standing, wall-mounted, transformer throat connected, etc. Special cubicle design and construction affords maximum rigidity for safe shipment and permanent alignment. Cubicles may be supplied of either steel or aluminum. Steel units are finished in a rust-resistant neutral baked gray finish. Aluminum units have a brush type finish, coated in clear lacquer.

Combined with power fuses, Continental high voltage air interrupter switches offer full circuit protection where automatic restoration of service is not required. Power fuses are accessible by two specially hinged doors on the free standing units. Doors are key interlocked so that they may be opened only when the switch is in the "Off" (open) position.

*For additional data, ask for item U1006, using the coupon on page 84.*

## Mobile substations for rural electric systems

A LINE of trailer-mounted mobile unit substations designed for use by rural electric co-ops, has been announced by the General Electric Co.

The units provide quickly available reserve capacity in emergencies and more economical maintenance of permanent substations, according to engineers of the company's Power Transformer Department.

Using simplified, standard designs keyed to the needs of rural systems, the new mobile units are available in two capacities, 1,500 and 2,500 kva; two high-voltage winding options, 67 and 33.5/67 kv; and two low-voltage winding options, 12.47/7.2 and 13.2/7.62 kv; making eight standard units.

Each can be mounted on either a full or semi-trailer chassis meeting the highway limitations of any state when a conventional towing vehicle is used. These rural mobile unit substations are approximately 22 ft. long, 8 ft. wide and 12½ ft. high, and weigh between 27,500 and 37,800 pounds.

*For additional data, ask for item U1007, using the coupon on page 84.*

## Meter protection found in aluminum shield

LIGHTNING bolts and heat waves—perennial trouble makers for watthour meters on the home—today are being successfully combated by a simple, inexpensive drawn aluminum shell from Aluminum Company of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.

Both lightning, with its surge effect on electrical equipment, and extreme heat, with its deteriorating rays, make watthour meters run fast. The results are customer complaints over high electrical bills and costly repair charges for the power companies.

The aluminum device to counteract these effects is a small shield that slips easily under or over the glass of a meter to protect the damping magnets from sudden large amperage currents. In meters built from 1925 to 1946, the sudden surge of power from a nearby lightning strike tends to demagnetize the damping magnets, causing the meters to run as much as 15 per cent fast. With the installation of the new shield, this current is forced through the aluminum, which sets up an opposing magnetic field, neutralizing that part of the surge which would affect the magnets.

*For additional data, ask for item U1008, using the coupon on page 84.*

## Electric lift designed for safer operation

NEW SAFETY and efficiency for street light maintenance and other overhead service operations has been introduced by Telsta Corp., 2900 Spring St., Redwood City, Calif., with its new Model T-35 Telsta electric lift.

Design of this unique high reaching equipment is such that the basket, on the end of a telescopic boom, is positioned alongside the driver of the vehicle so that it can be entered from

within the cab. Stopping near a street light, or other installation to be serviced, the worker steps into the basket and maneuvers to a desired position up to 35 feet by operating a patented directional single unit control.

As in the heavier Telsta electric lifts, Models T-40 and T-45, the new Model T-35 offers complete stability without spring locks or outriggers. It is electrically powered by its own generator independent of the truck's electrical system.

*For additional data, ask for item U1009, using the coupon on page 84.*

## New splicing kits for in-the-field insulation

A SERIES of three new splicing kits for casting in-line cable splices in epoxy resin have been added to its line of in-the-field splicing kits, Minnesota Mining and Manufacturing Co., Dept D6-152, St. Paul, Minn., has announced.

Using the new kits, which feature a convenient new split-mold, watertight splices can be insulated in the field in less than 10 minutes. Once a

splice has been cast, it is permanently encased in a block of insulating resin which will remain solid despite aging, heat and pressure, 3M said.

Design of the kits makes it possible to use them underground or when splices are exposed to severe weather and moisture conditions. The kits have been used to splice cables feeding airport lighting systems and street lights as well as secondary utility circuits, overhead splices, signal systems and municipal lighting systems.

Designated "Scotchcast" splicing kits 82-A1, 82-A2 and 82-A3, the new kits will accommodate wires and cables with outside diameters ranging from ¼-inch to 1-7/16-inch.

*For additional data, ask for item U1010, using the coupon on page 84.*

## Reel jack redesigned for cable reels

T. J. Cope, Inc., of Collegeville, Pa., announces that its cable reel jack has been redesigned for greater efficiency. Constructed of welded steel sections, the reel jack is ratchet-operated and designed expressly for cable reels.

Base sections are of 4", 5.4 lb. channel with side and back legs of ⅜" x 1¾" steel. The base measures 24" across and 14" in width to give maximum support in both directions. The swivel yoke ranges in height from 27¾" to 45½". The wrought steel square thread has a diameter of 2" and is 21" long.

The cable reel jack will accommodate up to 2⅜" spindles and has a capacity of 10 tons. Each pair of jacks weighs 130 lbs.

*For additional data, ask for item U1011, using the coupon on page 84.*

## New fuse link reduces outage

The A. B. Chance Co., Centralia, Mo., now offers a new fuse link which will practically eliminate transformer burnouts and at the same time permit them to operate at full capacity without unnecessary outages. This new Chance Type Slo-Fast fuse link is designed to permit utilization of the full overload capacity of distribution transformers but at the same time protect against any overloads which exceed the ASA safe loading standard for distribution transformers.

This is accomplished with a dual fuse element—one portion of which is slow, the other fast.

The time current characteristic curve of the Chance Slo-Fast fuse link is almost identical to the ASA safe loading curve for distribution transformers. This matching of the important portion of the safe loading curve of the transformer means that the full overload capacity of the transformer is realized without subjecting the transformer to overloads which may permanently damage the transformer or considerably shorten its useful life.

*For additional data, ask for item U1012, using the coupon on page 84.*

## Sealed paper-oil bushing of condenser type design

A series of new high voltage bushings for transformers and circuit breakers at operating voltages of 15, 23, 34.5, 46, and 69 kv is announced by the Lapp Insulator Co., Inc., Leroy, N. Y. Bushings 23 kv through 69 kv conform with current ASA-NEMA Standards.

The new Lapp-ASA bushing is a completely sealed paper-oil, condenser type design with the condenser core entirely surrounded by oil and enclosed in a rugged porcelain-metal housing. Spring-loaded gaskets seal the assembly and protect the bushing from leakage and moisture.

The Lapp bushing has no exposed core. The lower end of the core, below the aluminum ground sleeve, is covered permanently with a non-tracking porcelain housing. This protects the core from deterioration by sealing out contamination and moisture.

Bushings are radio and television interference free at rated voltage, have a significantly low power factor, and are non-changing in storage or in service.

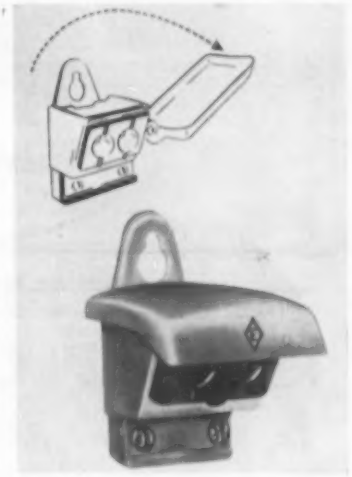
*For additional data, ask for item U1013, using the coupon on page 84.*

## Cable caps for new service cable sizes

Weatherheads for the new adequate wiring service entrance cable sizes are now available from Electrical Fittings Corp., 37-50 57th St., Woodside 77, N. Y.

The new units incorporate the exclusive "Swing-Top" feature—a patented design which provides a hinged hood that swings aside to hang in place until the service entrance cables are pulled through. Only one screw is loosened to free the hood.

Cable cap catalog number ESC 5 accommodates two new adequate wiring sizes; 2 #3 and 1 #5, 2 #3 and 1 #3, as well as fourteen other



service entrance cable sizes. A larger cable cap, Cat. No. ESC 804, takes 2 #1/0 and 1 #1/0.

Both units together with straps, watertight and non-watertight connectors for new adequate wiring service entrance cable sizes are now available from electrical wholesalers.

*For additional data, ask for item U1014, using the coupon on page 84.*

## Single switch meter-testers speed operation, reduce error

What single-switching can accomplish in speeding and simplifying equipment operation is illustrated in the new models of meter-testing equipment manufactured by Knopp, Inc., Oakland, Calif.

Used principally by utility companies for testing watthour meters, Knopp watthour meter-testing equipment provides overall accuracy well within .05%.

Heavy duty lever switches developed by Donald P. Mossman, Inc., Brewster, N. Y., greatly simplify the multicircuit switching methods used in the current and potential circuits of the equipment to provide extra time-saving features.

Knopp officials point out that chances of incorrect connections and resulting test errors are minimized as a result of the one-switching operation feature.

The Mossman heavy duty lever switch features a strong, rigidly braced nickel plated brass frame and positive, adjustable locking mechanism which cannot be affected by jar or vibration. Contact assemblies are actuated by phenolic rollers mounted on the side of the cam.

*For additional data, ask for item U1015, using the coupon on page 84.*

TRADE ARRO MARK

spiral-drive

# NAIL ANCHOR

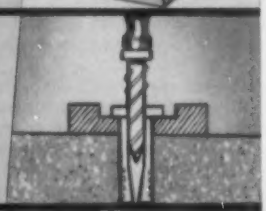
## For All Masonry
(RUST PROOFED)

13 SIZES AVAILABLE
Diameter and Length
from 3/16"x1 1/2"
thru 1/2"x3 1/2"

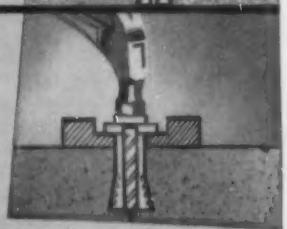
**DRILL HOLE**
Same diameter as anchor. Depth should be length of anchor less thickness of fixture.

**INSERT ANCHOR**
Through fixture and tap it into masonry flush against the fixture.

**PLACE NAIL**
Into anchor and hammer nail until fully inserted.



The fully inserted nail will expand the anchor and fasten the fixture firmly and neatly to the masonry.



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## A Valuable Tool for the Electrical Trade Down South

Now, for the first time, a special Directory for the use of the Southern and Southwestern electrical trade has been published by ELECTRICAL SOUTH.

This Directory of Electrical Manufacturers and their Southern and Southwestern Representatives has been a "smash hit" because it fills a long felt need. The tremendous increase in electrical business in the South in recent years has led many more electrical manufacturers to establish representation in this fast growing area. These representatives offer valuable services to the electrical wholesalers and the electric utility companies, as well as other branches of the electrical industry.

In compiling this Directory, we have endeavored to furnish the most complete listing possible of all electrical manufacturers in alphabetical order together with their Southern and Southwestern representatives.

For convenience, a number of manufacturers have included cross-reference advertising on their products. This extra service will help locate special facts and specifications and other pertinent product data.

So far as we know, this is the first Directory of its kind ever published for the Southern electrical trade.

You may obtain your copy at a cost of only $2.50. Address order to:

ELECTRICAL SOUTH Directory
806 Peachtree St., N. E.
Atlanta 8, Georgia

# News of the industry

*edited for Southern readers*

## Home fixture market due for expansion

RESIDENTIAL lighting fixture business can look forward to an expansion of four or five times its present volume within the next five years if it can work out a coordinated approach to the potentially rich but undeveloped consumer market.

This forecast was made by H. L. Weiss, general manager of General Electric Company's Large Lamp Department, at a two-day conference of residential fixture distributors held recently at Nela Park.

"The real potential," Mr. Weiss said, "is in selling light-conditioning for the 47,000,000 existing homes in this country. But," he warned, "depending on straight line, historical development of the market is not enough. The fixture industry must anticipate and meet the lighting needs of American families by providing a source of supply backed up by service — a service that will give the customer the information and help he needs to buy good lighting."

James C. Forbes, manager of market development for General Electric's Large Lamp Department, told the nation-wide representation of lighting fixture distributors that they can start realizing the profit potential in the market by taking advantage of the industry-wide promotion now under way.

Pointing out that the average home has only one-fifth of the lighting it needs, Mr. Forbes said the fixture distributor can move into the market by planning now for the expanded consumer demand these industry-wide programs are already creating.

The greatest single problem facing the industry is in giving the consumer a place where he can buy lighting and be sure of getting what he needs, Mr. Forbes said.

Gladys Miller, nationally-known consultant on merchandising and decorating, told the conference that the only way to salvage the "walk-out dollar," represented by the customer who does not receive the information service and help he needs, is to institute a sound merchandising-display plan.

Miss Miller strongly recommended a program that must include (1) a carefully thought out merchandising plan; (2) a well-selected model stock bought with the customer in mind; and (3) a display of model stock that allows the customer to see what he needs so that he can buy quickly and easily.

She said the alert distributor will study the lighting needs of his community and tailor his stock and selling to fit his local situation, rather than follow national trends and figures.

## Alzak aluminum predicted leading fixture metal

A PREDICTION that Alzak aluminum will become a dominant material for commercial and institutional lighting fixtures was made recently by Curtis Lighting, Inc., Chicago.

Already outselling steel four to one in some groups of the company's fixtures, Alzak is expected to account for well over 50 per cent of its commercial fixture sales by 1960, Curtis president John A. Wright reported.

Alzak is a patented finishing process developed by Aluminum Company of America. It produces a durable, hard, colorless, transparent oxide coating on aluminum which results in a highly reflective and light-diffusing surface.

Greatest growth impetus for Alzak is coming from the widespread use of recessed fluorescent fixtures called troffers in schools, banks, and other commercial installations where top quality lighting is important.

"Alzak's high reflective qualities, durability, long-lasting finish, and easy maintenance make it popular for these installations," Mr. Wright said.

During 1955, one group of Curtis products showed $261,000 in sales of Alzak as against $65,000 in steel. In another fixture group, Alzak volume was $615,000 compared to $337,000 for the same group in steel.

Mr. Wright explained that Alzak aluminum costs slightly more

**MISS HOME LIGHTING FIXTURE—October is American Home Lighting Fixture Month and this young lady, Miss Lili Gentle, was chosen to reign as queen of this important month by Moe Light salesmen.**

than anodized aluminum or steel because of the very high purity aluminum and extra processing required. But the higher initial cost is more than offset by the more efficient lighting and longer life which Alzak finishing provides, he said.

## Lighting firm announces vast expansion program

ANOTHER MILESTONE in the rapid growth and expansion of Sta-Brite Fluorescent Manufacturing Co., of Miami, has been reached with the company's announcement that it will more than double present plant capacity.

Plans for the company's 38,500 square foot addition were announced exactly one year after completion of its 30,000 square foot new factory. The company has doubled its operating facilities five times in its nine-year history.

Nine years ago Sta-Brite started as a little hole-in-the-wall with a foot kick press and hand drill, a drill press, a foot shear and a hand brake. Today it has ten punch presses, three press brakes, three spot welders, electric welder, power sheer, three drill presses and the largest bonderizing plant in the Miami area.

It also has four 12-foot water wash paint booths, two bake ovens and one of the most complete tool rooms in the area to manufacture its own dies, as well as engineering and drafting departments.

"If it weren't for the tremendous commercial and industrial expansion in the southeastern states," says Sydney Kandel, founder, "we'd still be a little two-man shop, instead of a plant which can compete with the biggest on any terms."

Mr. Kandel had returned to Miami to buy a small electrical appliance shop and some fluorescent fixtures were in the stock. Interest was so keen, he read every book and trade journal he could find. Then he added some ideas of his own, acquired while working in machine and automobile shops, and hired an apprentice machinist.

Anyone could get business in the immediate postwar years in Miami, according to Mr. Kandel, but keeping that business and advancing with the area was another matter entirely. He succeeded in prevailing upon Nat Furman, a long-time friend and a salesman, to bring balance to the organization. Mr. Furman is now president and sales manager of the firm.

Sta-Brite decided to make haste slowly and adopted a policy of expanding only when business warrants. Although the local market had been keeping the plant going at near capacity, contracts began coming in from other southeastern states and Louisiana and Texas.

Now that plans are developing for the new expansion program, Mr. Furman is concentrating on the vast Latin American market. Some of their products have been sold to these countries and even Spain.

Sta-Brite today employs 65 persons, a big increase over the one man who was hired to help Mr. Kandel in the shop nine years ago. Of the total number of employees, all but one is 40 years old or older.

**Nat Furman, left, president and sales manager, and Sydney Kandel, founder of Sta-Brite Fluorescent Manufacturing Co., of Miami, who have announced plans to double present plant capacity, examine a unit of a large order for a leading Miami department store.**

## Top electrical figures lined up for Trade Show

A TOP LEVEL roster of nationally known figures has been lined up for the Conference sessions to be held in connection with the forthcoming Electrical Trade Conference and Exposition set for Washington, D. C. February 12, 13, 14, according to word released by William G. Hills, managing director. The Trade Show, sponsored by the Electric Institute of Washington, D. C., will be held at the Shoreham Hotel.

Mr. Hills revealed that the Trade Conference and Exposition will also launch National Electrical Week in the nation's capital and that Merrill E. Skinner, chairman for National Electrical Week and vice-president of the Union Electric Company of Missouri, has been invited to preside at the opening day luncheon.

Other well known men who will participate in the sessions include: Oliver F. Burnett, president, National Electrical Contractors Association and chairman of the board, Kelso - Burnett Electric Company of Chicago; Harry C. MacNary, Fischbach & Moore, Inc., New York City; Merwin Brandon, vice-president, Underwriters Laboratories and chairman, Electrical section, National Fire Protection Association; Carl Bremicker, chairman, National Adequate Wiring Bureau, and vice-president, Northern States Power Co.; Edwin Vennard, vice-president and managing director, Edison Electric Institute, New York City; Leon Chatelain, Jr., president, American Institute of Architects; and J. H. McCulloch, Progress Committee, Illuminating Engineering Society Independent Testing Laboratory, Boulder, Colo.

The Electrical Trade Conference and Exposition is being put on by the leading manufacturers of electrical equipment used mainly for commercial and industrial purposes. It will, in effect, be a show for electrical contractors, Federal government inspectors, engineers, architects and other allied groups. Admission is free.

Mr. Hills said "With the nation's capital the hub of the government specification writing and buying . . . manufacturers have a tremendous opportunity to tell their story right on target to a select group of important people in the Washington, Baltimore, Richmond area."

He added: "And with the nationally known group of electrical personalities coming to speak at the three day show combined with



the very latest in electrical equipment on display no one can afford to miss this outstanding e-

8 mm. movie camera and projector on behalf of those present.

His fellow employees presented

companies in disseminating information on the application of good lighting principles to home study,

how to make money on lighting fixtures!

**PICK A LINE** that's well-designed and well-engineered. Design and engineering are absolute essentials of good lighting.

**PICK A LINE** that's quality-manufactured . . . tops in finish, metal fabrication and in assembly. Owners and users will appreciate your insistence on quality.

**PICK A LINE** that's designed with the contractor in mind. You'll find installations cleaner, easier and *much more profitable.*

**IF** you keep these things in mind, we know from experience good lighting installations bring you more and more jobs . . . and we know that Smithcraft will get its share (or more) of your business.

*The Sheraton (shown above) is an ideal unit for offices, schools, stores, and all kinds of installations . . . very shallow . . . very easy to install.*

Smithcraft
LIGHTING
CHELSEA 50, MASSACHUSETTS

Ask us to send you the current Smithcraft catalog . . . it is a compilation of the newest and most functional fluorescent fixtures in use today.

*America's finest fluorescent lighting*

ers and vision care specialists, newspaper editors in charge of home and education features will

**Slater SPECIFICATION GRADE**

the very latest in electrical equipment on display no one can afford to miss this outstanding event."

The Electrical Trade Conference and Exposition will follow the first Air Conditioning, Ventilating and Electric Space Heating Exposition set for Feb. 8, 9, 10, and also sponsored by the Electric Institute of Washington.

## Pioneer supply salesman honored on retirement

JOHN R. BAER, a pioneer electrical supply salesman of the South and senior salesman of Mill-Power Supply Co., Charlotte, N. C., retired recently after 25 years service there, according to an announcement by B. Merritt, sales manager.

Affectionately known to his friends as "Cap'n Jack," Mr. Baer was signally honored upon his retirement at a dinner sponsored by a group of electrical contractors who had been his customers over the years. The affair was attended by 70 friends and was representative of the entire electrical industry in the Charlotte area. Ralph K. Robinson, president of Robinson Electric Co., acted as toastmaster and Charles W. Moseley, vice-president of R. H. Bouligny, Inc., presented "Cap'n Jack" with an 8 mm. movie camera and projector on behalf of those present.

His fellow employees presented Mr. Baer with a set of solid brass ship's clock and barometer.

Mr. Baer was born in Maryland. After studying at Baltimore Polytechnical Institute, he worked for twelve years at Southern Electric Co. of Baltimore, and was one of the first electrical supply salesmen to travel down into Virginia and North Carolina.

In 1920, he moved to Charlotte and became a member of the firm of Carolina States Electric Co. and remained there until he joined Mill-Power Supply Company on April 1, 1931. Thus his experience in the industry covers a period of nearly 50 years.

With his wife, Ellie, Cap'n Jack plans to live at Wrightsville Beach, N. C.

## New promotion booklet on home study lighting

A NEW 8-page, two-color booklet on lighting for home study, "How To Make Homework Lighter," has just been published by Better Light Better Sight Bureau, it was announced by H. A. Stroud, promotion manager, Monongahela Power Co., and chairman of the Bureau. The booklet is designed for use by electric light and power companies in disseminating information on the application of good lighting principles to home study, and was prepared by the Home Lighting Education Committee of the Bureau.

Attractively printed and illustrated, this booklet is a new version of a popular and widely used booklet previously published under the same title. "Every word and illustration in the booklet is new, but the story it tells is timeless," it was pointed out by Walter G. McKie, general sales manager, Rochester Gas and Electric Corp., and chairman of the committee preparing the booklet.

The copy and drawings in the booklet are informal and are designed to appeal both to parents and to school-age children. Many of the common faults in the selection and placement of lamps are pointed out, with useful, practical suggestions as to how the lighting may be improved without the necessity of extensive room changes.

"How To Make Homework Lighter" can be used to excellent advantage at demonstrations, home economics classes, home shows, women's meetings and on display floors.

Extensive publicity for the new booklet has been initiated by the Bureau, Mr. Stroud reported, to tie in with the "back-to-school" movement. In addition to professional magazines of school teach-

**A recent dinner honoring John R. Baer, retiring after 25 years as electrical supply salesman for Mill-Power Supply Co., was attended by 70 friends and representatives of the electrical industry in the Charlotte area. From left to right (seated) are Wallace Hanks, pres., Southern Electric Service Co.; Thad Harrison, pres., Harrison & Wright Co.; Ralph K. Robinson, pres., Robinson Electric Co.; W. G. Thomas, pres., Mill-Power Supply Co.; and Gordon Wells, manufacturers' representative. Left to right (standing) are Woody Fogle, pres., Gaston Electric Co.; Ralph Holtshouser, sec.-treas., Brawley Construction Co.; George Stratton, pres., Armature Winding Co.; Mr. Baer; Bill Edwards, salesman, Mill-Power; Olive Rowe, vice-pres., R. H. Bouligny Co.; and Charlie Cheney, pres., Cheney Electric Co.**

ers and vision care specialists, newspaper editors in charge of home and education features will be contacted. The public will be advised to inquire at their local electric service company for this booklet.

"How To Make Homework Lighter," (form B-563) may be obtained from Better Light Better Sight Bureau, 420 Lexington Ave., New York 17, N. Y. Price is $4.00 per hundred.

## Sales package ties in with OHI program

AN idea-packed merchandising package was distributed to Moe Light sales representatives recently for a continuing program to tie-in with Operation Home Improvement.

**This merchandising package distributed to Moe Light sales representatives contains ideas and materials to help the dealer tie lighting fixtures in with Operation Home Improvement.**

The Moe Light sales representatives personally delivered copies of the portfolio to the more than 850 Moe Light distributors. The sales representatives explained how to make the best use of the many sales helps included. The distributors, in turn, will use the merchandising package with the dealers in their area.

The package contains "Six steps to profitable business," including tested tips on how to cooperate with the local OHI office, banks, etc.; sample reminder flyers to be used by the distributor to repeat the promotion highlights to dealers and contractors; and copies of the OHI window or door decal and a reproduction, suitable for framing, of the nation's Housing Administrator's Declaration of Home Improvement Year.

Also included in the package are a series of one-minute radio spot announcements ready to have local


**Slater SPECIFICATION GRADE**

**GROUNDING RECEPTACLES**

**Send for your FREE illustrated price sheet ... lists all Slater Wiring Devices**

**S-321-BR**

Single receptacle, brown, Nema 125 Volts—15 Amperes, with ears. Available in ivory (S-321-IV) or with no ears (S-320).
List price .....80

**S-328-BR**

Nema, 15 Amperes — 250 volts, with ears. Sturdy bakelite. Compact design. Available in ivory (S-328-IV) or with no ears (S-327).
List price .....80

**S-396-BR**

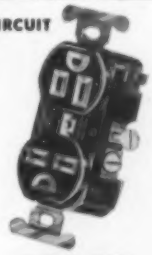
20 Amperes—250 volts, 3-wire, 3-phase or single phase with grounding, with ears. Available in ivory (S-396-IV).
List price .....$1.45

SPECIFICATION GRADE

**320-BR**

Duplex receptacle, brown, Nema, 15 Ampere, 125 Volts, with ears.
List Price . . .
320-BR $2.19
320-IV $2.31

2-CIRCUIT



**322-BR**

New, 2 circuit duplex receptacle—15 amperes, 120 volts; 15 amperes, 250 volts. Furnished with ears and in ivory (322-IV).

**326-BR**

Combination 2 and 3-wire duplex grounding receptacle with ears. Also accepts parallel bladed caps that do not require grounding. 15 Ampere, 125 Volts, 10 Ampere, 250 Volts.
List Price . . .
326-BR $2.24
326-IV $2.39

**393-IV**

New, 2 circuit duplex receptacle, 15 amperes, 125 volts. 2 wire at one end; 10 amperes, 250 volts, 3 wire at other end. U/L approved. List price—
$2.00 BR, $2.10 IV

Send for Bulletin 37.

**394-BR**

New duplex receptacle takes either tandem or 3-wire crow foot caps, 2 circuits, 20 A-250 Volts, and 15 A-250V.
List Price . . . includes steel wall plate . . .
394-BR $2.44
394-IV $2.54

**3200-BR**

Intermediate grade, Nema duplex receptacle 15 amperes, 125 volts.
List Price .....90

*Covers available*
Add suffix-3 for receptacles on 3¼" cover
Add suffix-4 for receptacles on 4" cover

**Slater ELECTRIC & MANUFACTURING COMPANY**
56TH STREET AND 37TH AVENUE • WOODSIDE 77, L. I., N. Y. • ILlinois 8-6500

# Today's RLM "Specs" for Industrial Lighting Units are HIGHER THAN EVER BEFORE!

Back in 1919, when the first RLM Dome Reflector Specification was established, if someone had suggested that someday industry would require a lighting unit which directed 20%-30% of its light toward the ceiling—there would have been quite a few raised eyebrows. Yet, today 20%-30% Upward Light is an accepted factor contributing to better seeing in modern factories . . . while the basic RLM Dome is still indispensable in many industrial applications.

Through the years, RLM Standards for quality in lighting equipment performance and construction are keeping pace with industrial lighting progress. Today, both the first and latest types of units are covered by HIGHER THAN EVER RLM SPECIFICATIONS . . . and so are 34 other incandescent and fluorescent units for which RLM Standards have been established.

It is especially important for you who buy, use, specify or sell industrial lighting equipment, to take advantage of these higher-than-ever specs. More than ever before, they contribute to uniformly satisfactory industrial lighting equipment performance. The 1956 Edition RLM Book brings you all the newly-established and revised RLM Specifications. Get your free copy from: RLM Standards Institute, Suite 828, 326 W. Madison Street, Chicago 6, Illinois.

**Typical HIGHER-THAN-EVER RLM SPECIFICATIONS**

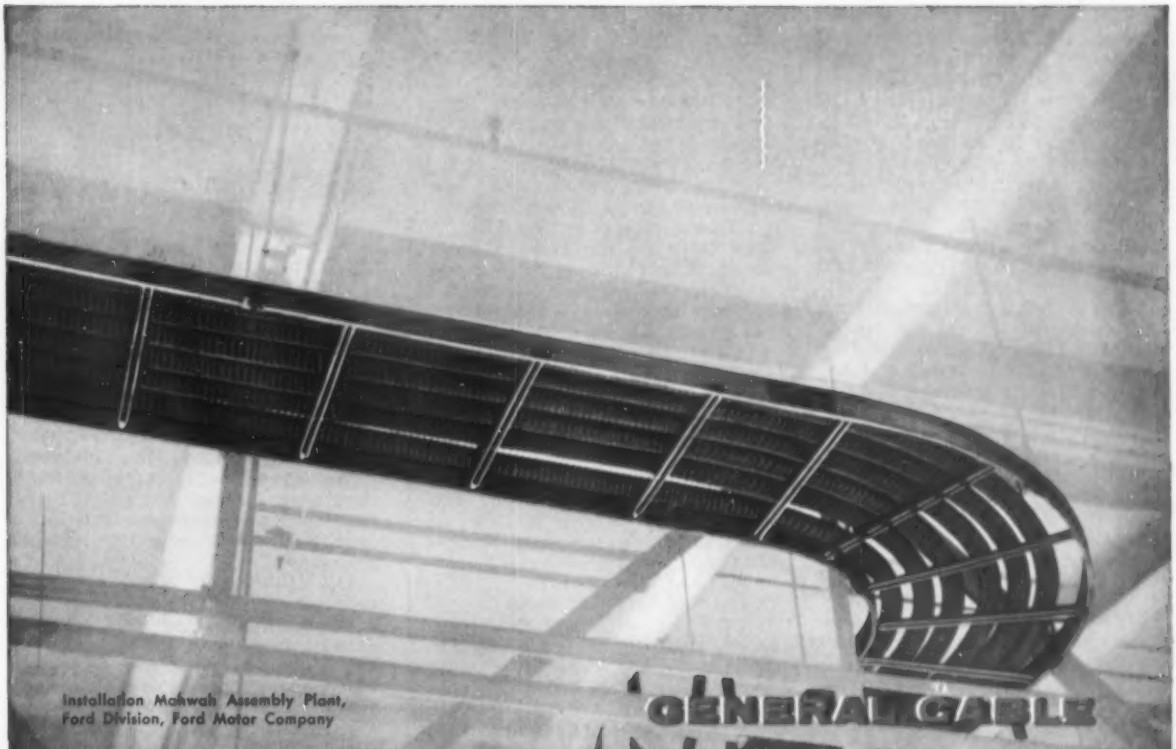
**for incandescent and fluorescent units:**
● New High Reflection Factor ● New High Light Output

**for fluorescent units:**
● All-White Porcelain Enamel Reflectors
● Upward Light for more Brightness Control
● New Shielding Angles for less Lamp Glare

R-1464

MANUFACTURER'S NAME
COMPLIANCE WITH RLM SPECIFICATIONS
ELECTRICAL TESTING LABORATORIES, INC.

RLM STANDARDS INSTITUTE

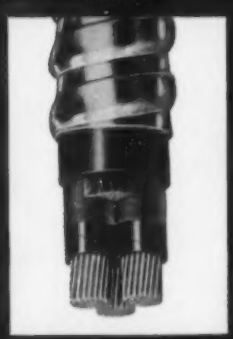


Installation Mahwah Assembly Plant,
Ford Division, Ford Motor Company

GENERAL CABLE

# INTERLOCKING ARMORED CABLE

## SAFE · DEPENDABLE · ECONOMICAL



Modern engineering design and superior flexibility impart *extra long life* to GENERAL CABLE'S INTERLOCKING ARMORED CABLE. Available in ALUMINUM, BRONZE and STEEL TAPE ARMOR, with every type of insulation for all power applications. Lighter weight and easier to install.

GENERAL CABLE CORPORATION,
420 Lexington Avenue, New York 17, N. Y. Offices and Distribution Centers Coast-to-Coast.

BE SPECIFIC...SPECIFY GENERAL CABLE

name and address filled in; mat ads especially prepared to tie-in Moe Light with Operation Home Improvement; and a series of newspaper and radio publicity stories ready to be used on the local level, with a brief suggestion of how to get the best cooperation from the local newspapers, radio and TV stations.

Another aid in the package is a copy of the page prepared and released by the Moe Light Division of Thomas Industries Inc., Louisville, Ky., through a recent issue of Publishers' Auxiliary. This is mailed to newspapers and includes editorial features and dealer ads, all tied in with Operation Home Improvement.

## Atlanta sales firm marks 25th year

THIS YEAR The Gearhart Company, Atlanta, marks its 25th Anniversary as electrical sales representative. As part of the celebration, the company has published a brochure telling the story of its progress, a progress which according to Walter V. Gearhart, founder and president, "in every measure parallels the history of its people and we hope the story will be of interest from the standpoint of personalities as well as giving the reader the feel of the growth and dynamics that are present in the great Southern market that The Gearhart Company serves."

The Gearhart Company was born in a small Atlanta office in 1931. Walter V. Gearhart began this enterprise as a sales representative with a total sales force of one. A series of expansions followed, together with the setback of World War II when Mr. Gearhart was ordered to active duty with the United States Navy and the Federal Government needed space in the Atlanta area and the offices and warehouse of the company were taken over.

A great rebuilding program was undertaken after the war, and today The Gearhart Company has available 41,000 square feet of warehouse and office space in North Atlanta, as well as branch offices in Birmingham, Ala.; Charlotte, N. C.; and Miami, Fla.

## Transformer film shows manufacturing process

"TRANSFORMERS in the Making," a 16mm sound color movie, has just been released by Wagner Electric Corp., 6400 Plymouth Ave., St. Louis, Mo.

The film shows progressive steps in the manufacture of power and distribution transformers including tank fabrication, coil winding, assembly, testing and shipping. The final scenes, taken during the installation of a large power transformer, stress the importance of adequate field service.

Narration is brisk and factual without being highly technical. Running time is 27½ minutes.

"Transformers in the Making" may be borrowed free of charge for showing to industrial, commercial, engineering and educational groups through Wagner sales branches.

## IES lighting report for commercial kitchens

A MUCH-NEEDED lighting study has just been completed and published in a report by the Illuminating Engineering Society, "Lighting for Commercial Kitchens." This report covers all phases of lighting for food handling and preparation in restaurants and other institutional kitchens from delivery of foodstuffs, through storage, inspection, cooking, serving and pricing.

It emphasizes the wide variety of seeing tasks, critical and general, which are encountered in such kitchens. The lighting task for each operation is analyzed, sanitary conditions and speed being of prime consideration.

The report includes recommended lighting levels; brightness ratios; reflectances of walls, ceilings and floors; and selection of types of fixtures providing ease of maintenance as well as proper illumination characteristics.

"Lighting for Commercial Kitchens" is an 8-page report, concise and fully illustrated, of value to owners, architects, lighting and consulting engineers, electrical contractors, and others.

## A. D. Hammond honored on Golden Anniversary

A. D. HAMMOND, Southern District manager and director of the Graybar Electric Company, was honored at a dinner party recently at the Atlanta Athletic Club in recognition of his 50 years service with the company. In attendance at the dinner were some hundred employees including district officers, branch managers and Willard E. Henges, president of the company.

C. V. Weaver was master of ceremonies and played a tape recording of messages from all the district managers and officers in the company from coast to coast. President Henges acknowledged the valuable contribution made by Mr. Hammond during a half century of service. The employees presented to Mr. Hammond an engraved pen and pencil desk set as a tribute to his outstanding accomplishment.

Mr. Hammond was employed by the Cumberland Tel. & Tel. in 1906, at Nashville, Tenn., and in 1912 transferred to the Southern Bell Tel. & Tel. Co., in Atlanta, and later transferred to the West-

**A. D. Hammond, right, Southern District manager for Graybar Electric Co., Atlanta, who has just completed fifty years of service with Graybar, receives congratulations from W. E. Henges, Graybar president.**

ern Electric Co. He served as sales manager of the Graybar office at Miami and Jacksonville, appliance manager at Atlanta, branch manager at Birmingham, and district manager at Cincinnati and Atlanta. He has also served as a director of the company since December of 1952.

## Civil Service announces Radio Engineer exam

THE United States Civil Service Commission has announced an examination for Radio Engineer for filling positions in the Federal Communications Commission in Washington, D. C., and throughout the United States, its territories and possessions. The entrance salaries are $4,480 and $5,335 a year.

To qualify, applicants must have had appropriate education or experience or a combination of both. Persons wishing to qualify on the basis of technical experience rather than a full 4-year college curriculum, will be required to take a written examination to test the adequacy of such experience.

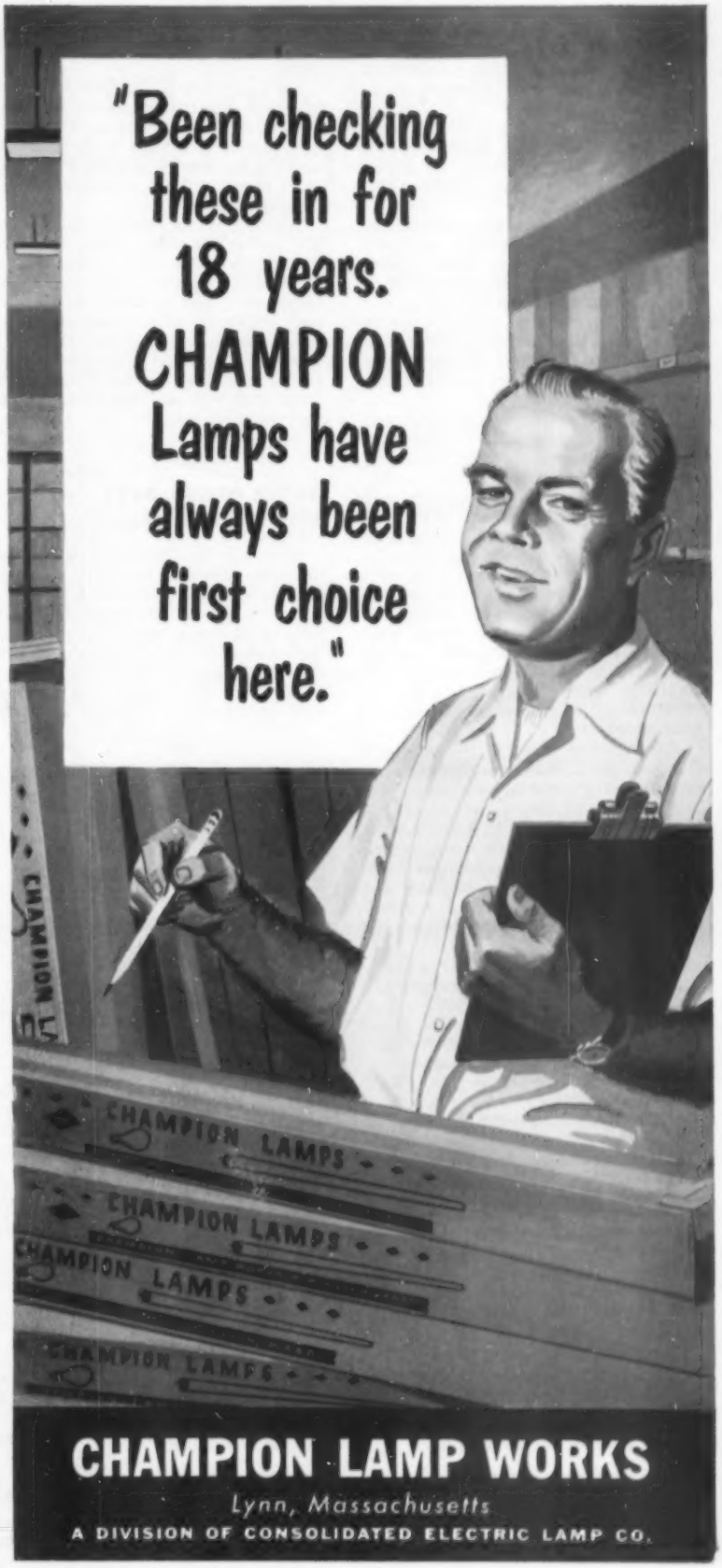
Further information and application forms may be obtained at many post offices throughout the country, or from the United States Civil Service Commission, Washington 25, D. C. Applications will be accepted by the Board of U. S. Civil Service Examiners, Federal Communications Commission, Washington 25, D. C., until further notice.

## Outlook favorable for long-term construction

A FAVORABLE long-range outlook for construction activity, spanning a decade or more, was voiced recently by William Collins, president, Walter Kidde Constructors, Inc., engineers and builders of New York and Houston.

The sharp upsurge of construction in 1956 — led by an unprecedented $2.8 billion in first half industrial contracts — is distributed over a broad base which should preclude any serious or prolonged dips in construction activity, Mr. Collins said. Among factors which influence a favorable long-range forecast, he included population growth, corporate mergers and increased competition.

"From the long-range view, construction can be expected to continue strong because of the constantly growing population which increases the demand for goods and services," Mr. Collins said. "The huge amount of liquid capital accumulated by insurance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CHAMPION LAMP WORKS
Lynn, Massachusetts
A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO.

companies and pension funds, together with increasing public acceptance of securities, makes it possible to readily finance construction projects."

Corporate mergers and company acquisitions in past months have been and will continue to be a source of construction activity, Mr. Collins said.

"It is important to realize that construction lags behind mergers by a period of two to three years, due to the time required to correct inadequacies discovered in the new organization," Mr. Collins said. "Thus the mergers which are taking place this year will not have their full effect upon construction volume until 1959."

The federal highway program will have a dual effect upon future construction, Mr. Collins pointed out. In addition to its direct contribution, the program will offer industry an attractive opportunity to expand warehousing and distributing facilities. Particularly will this be true of manufacturers of consumer goods who now utilize a few centrally-located point of storage, Mr. Collins said. New, improved roads will enable manufacturers to re-locate warehouse facilities within easy truck access of markets, with subequent reduction in costs.

All of these changes — in addition to plant modernization and expansion currently in force — will result in increased competition, Mr. Collins said. One of the marks of a strong economy, competition will continue to make industries aware of the importance of efficient manufacturing, assembly and distributing processes, he explained.

"Modernization is not confined to the leaders within an industry," Mr. Collins said. "Originally, the leaders modernize because they feel it will strengthen their competitive position. Eventually, other companies within the industry are forced to improve their processes to keep pace. Competition will be one of the hall marks of the next decade."

As a final contributing factor to favorable long-range construction activity, Mr. Collins cited the amount of research presently being underwritten by industrial concerns. As new products continue to result from research programs, new plants will be required for their manufacture.

## Wakefield wins award "Best Place to Work"

THE NEW general offices of The Wakefield Company, Vermilion, Ohio, have been declared a winner of the 1956 "Best Place to Work" Award, presented annually for outstanding office design by Management Methods Magazine.

Entries were judged on the basis of their ability to stimulate employee and executive productivity and morale through well-planned, well-integrated quarters. More than one hundred separate entries were submitted.

According to Jerome W. Harris, the publisher, the "Best Place to Work" Awards were established in 1954 "to support our very strong belief that well-trained employees and superior office machines — don't assure high productivity . . . The environment in which men and machines operate," he said, "has a direct and measurable effect on their output."

## Dallas group buys wire system plant

A GROUP of Dallas businessmen has bought the Howard Electric Co., of Chicago, Ill., which was a division of the Howard Foundry Co., of Chicago, manufacturers of Howarduct — a standardized underfloor wire distribution system.

Factory and operating offices will remain in Chicago at 1700

"Charlie, this came off!"

"Fetch me my Do-It-Yourself Kit!"

Certified Lighting for a Better America

**ELECTRICAL CONTRACTORS, WHOLESALERS, LIGHT & POWER COMPANIES!**

This program is sponsored by all these member companies of the Industrial and Commercial Lighting Equipment Section of the National Electrical Manufacturers Association to help you increase your sales.

These manufacturers stand ready collectively and individually to cooperate with you in every possible way to help you get the most out of this CERTIFIED LIGHTING PROGRAM. Call on them!

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Amplex Corp.
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Pittsburgh Reflector Co.
The Pyle-National Co.
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Plus Profits and *"Plus Features" Check Lists* go hand in hand in Certified Lighting installations. With the four *"Plus Features" Check Lists* you can quickly point out to prospects the important quality aspects of lighting . . . and the advantages of special, additional lighting in specific areas. You sell *bigger* lighting jobs because these check lists make your customers see the need for a *better* lighting job.

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### Is Certified Lighting In Operation In Your Area?

This program is operated locally under the joint sponsorship of all electrical groups. If your area is listed below, get in touch with your local group . . . otherwise, write The National Lighting Bureau.

Boston, Mass.
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Chattanooga, Tenn.
Cincinnati, Ohio
Detroit, Mich.
Jackson, Miss.
Los Angeles, Cal.
New Orleans, La.
Norwalk, Conn.
Omaha, Neb.
Providence, R. I.
Rochester, N. Y.
Sacramento, Cal.
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San Francisco, Cal.
Waterbury, Conn.
Worcester, Mass.

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Certified Lighting for a Better America

Certified Lighting

NATIONAL LIGHTING BUREAU, 155 East 44th Street, New York City, Sponsored by the Industrial and Commercial Lighting Equipment Section of NEMA the National Electrical Manufacturers Association

R-1401-9

North Kostner. Additional offices will be opened in Dallas.

The purchasers are Leonard B. Brown, former president of Best Motor Freight Lines and now chairman of the board of Transport Insurance Co. of Dallas; William Kearney, president of the Kearney Co., distributors of electrical products; and Rex V. Lentz, former Dallas banker and now head of his own management consultant firm.

The buyers also announced that James W. Hudson had been elected vice-president and general manager of Howard Electric Co. Mr. Hudson is the designer and inventor of the Howarduct system, and is well known nationally in electrical construction circles. He formerly was director of research and chairman of the management committee of another electric firm.

Other officers of the firm will be L. B. Brown, chairman of the board; William Kearney, president; William C. Kearney, vice-president; and R. V. Lentz, secretary-treasurer.

William Kearney was associated for many years with General Electric Company in a management capacity. He was the organizer and first president of Texas Wire & Cable Co., and is nationally known in the electrical field.

## Dates Ahead

**Edison Electric Institute,** Transmission and Distribution Committee, Hotel Statler, Buffalo, N. Y., Oct. 18-19, 1956.

**International Association of Electrical Inspectors, Southern Section,** Annual Meeting, Statler Hilton Hotel, Dallas, Tex., October 22-24, 1956.

**University of Texas,** Ninth Power Distribution Conference, University Batts Auditorium, Austin, Texas, Oct. 22-24, 1956.

**Florida Association of Electrical Contractors,** Annual Convention and Electrical Exhibits, Balmoral Hotel, Miami Beach, Fla., Oct. 24-27, 1956.

**Oklahoma Utilities Association,** Electric Light and Power Division, Western District Meeting, Chickasha, Okla., Oct. 25, 1956; Eastern District Meeting, Poteau, Okla., Oct. 26, 1956.

**National Association of Corrosion Engineers,** Southeast Region, Fall meeting, Charlotte, N. C., Nov. 8-9, 1956.

**American Institute of Electrical Engineers,** Winter Meeting, Hotel Statler, New York, N. Y., Jan. 21-25, 1957.

**Southeastern Electrical Wholesalers Association,** Seventh Annual "Industry Day" Meeting, Atlanta Biltmore Hotel, Atlanta, Ga., Jan. 24-25, 1957.

**National Association of Purchasing Agents,** Public Utility Buyers' Group, 26th Annual Mid-Winter Conference, Brown Hotel, Louisville, Ky., Feb. 3-5, 1957.

**Air Conditioning, Ventilating and Electric Space Heating Exposition,** Sheraton Park Hotel, Washington, D. C., Feb. 8-10, 1957.

**The Electrical Trade Conference and Exposition,** Shoreham Hotel, Washington, D. C., Feb. 12-14, 1957.

**Southern Safety Conference and Exposition,** John Marshall Hotel, Richmond, Va., March 3-5, 1957.

**Oklahoma Utilities Association,** Annual Convention, Tulsa Hotel, Tulsa, Okla., March 28-29, 1957.

**Southeastern Electric Exchange,** 24th Annual Conference, Boca Raton Hotel & Club, Boca Raton, Fla., April 1-3, 1957.

## New Miami warehouse opened by supply firm

CARY CHAPMAN & Co., Atlanta manufacturers' representative, has announced the opening of a new warehouse in Miami at 3370 N.W. 37th St. The new warehouse will stock a complete line of wires and cables, TV tubes, diodes and transistors, attic and window fans, toggle bolts and drills, floor boxes, and electrical tapes.

With the new Miami addition, the company now maintains warehouses in New Orleans, Greensboro, Atlanta, and Miami. In addition to serving the Miami area from this new warehouse, shipments will be made to all points in Florida except Tallahassee and West. Tallahassee will continue to be served from Atlanta stock and Pensacola from the New Orleans warehouse.

**The new Miami warehouse recently opened by Cary Chapman & Co., Atlanta manufacturers' representative. The warehouse will stock a complete line of electrical supplies and equipment and electronic tubes.**

## Distributors attend NAED local meetings

EXECUTIVES representing electrical wholesale distributing firms from Virginia, Washington, D. C., North and South Carolina, Alabama, Georgia, Florida, Western Pennsylvania and West Virginia—all members of the National Association of Electrical Distributors—met recently in a series of five local meetings to discuss national and local problems affecting the industry.

Chairman of the Virginia — Washington, D. C. meeting in Richmond was C. P. Andrew, of the Noland Company, Inc., Newport News, Va.

The North Carolina — South Carolina meeting in Greenville, S. C., was presided over by John W.

Shealy, of Shealy Electrical Wholesalers, Inc., Greenville, S. C.

Chairman of the Alabama — Georgia meeting in Atlanta was T. H. Wells, Jr., of Wells Electric Supply Co., Inc., Birmingham, Ala.

J. A. Meier, of Florida Electric Supply, Inc., Tampa, was chairman of the Florida meeting in Jacksonville.

The Western Pennsylvania-West Virginia group was presided over by E. D. Knight, of Virginian Electric Inc., Charleston, W. Va., at its meeting in Pittsburgh.

Reports were made at all meetings on NAED activities and recent developments in the association's program and the national picture. An illustrated forum pointed out ways in which the electrical distributor can improve his position and relations with others in the industry.

## Brief news notes of manufacturers

THE NAME of General Electric's Trumbull Components Department has been changed to the Circuit Protective Devices Department, according to an announcement by L. E. Walkley, Department general manager.

The name "Circuit Protective Devices" was selected as the most descriptive of the kinds of products that this G-E component manufactures for low-voltage electrical distribution systems (600 volts and below).

The name change follows a survey which was undertaken recently by the General Electric Company to alleviate confusion as to product scope in naming the more than 100 G-E operating departments. The objective is to enable customers, employees and the public to determine more easily which company component is responsible for particular G-E products.

* * *

A NEW SUBSIDIARY of Panellit, Inc. has recently been formed, it was announced by company officials. Panellit, Inc. is a fabricator of instrument panelboards and designer and fabricator of control systems, data reduction systems, and annunciators.

The new subsidiary, Panellit Service Corporation, will take over the activities of the Instrument Services Division of the parent company and will expand Panellit activities in the field of instrumentation and automation. Operating divisions of the new corporation are the Contracting Division, Maintenance Division, and Systems Division.

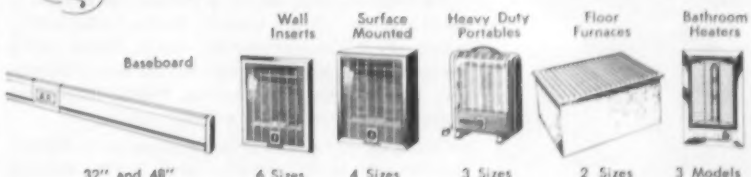
Neil M. Blair, former manager

*Fill every Electric Heat requirement and get those extra wiring jobs!*

Cavalier's *complete range* of styles, sizes and capacities puts you in position to take any job. The finer Cavalier quality is easy to see, easy to sell and every item is *fully guaranteed.* Better materials. Extra convenience features. Built right—to eliminate profit-robbing callbacks!

Make your first businesslike profit by selling Cavalier automatic electric heaters, floor furnaces, baseboard . . . your second from wire, panels and other materials needed for installation. A sure way to build your business:

Cavalier ELECTRIC HEAT

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This new FANNER Catalog illustrates and describes the wide range of Superformed Line Conductor Accessories . . . gives selection tables, application data and suggested installation methods. Get acquainted with this catalog now so that when you need accessory items for overhead distribution and transmission lines, you can take advantage of the many extra features of Fine FANNER Superformed products. Each product in the FANNER Superformed line is precision manufactured to install easier and perform better on the job. Careful packing insures safe delivery and simplified storage. Highest quality materials provide long life regardless of the type of installation. With all their extra features, FANNER Superformed products cost no more than ordinary products.

For the latest data on line conductor accessories — information that will be of exceptional value to you, write for the new FANNER Catalog EP6 today!

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**THE FANNER MANUFACTURING CO.**
Electrical Products Division
Brookside Park • *Established 1894* • Cleveland 9, Ohio

AGENTS AND DISTRIBUTORS IN PRINCIPAL CITIES


of the Panellit Instrument Services Division has been elected vice-president and general manager of the new subsidiary.

* * *

COMMEMORATING another important step in company growth, Kuhlman Electric Company broke ground this month for a new administration building. The new headquarters office will be located in the Detroit metropolitan area to provide better centralization and facilities for directing the sales and administration of the company's three regional factories.

The new Detroit headquarters will put Kuhlman in a better position to serve its customers and continue the company's long range development plans. Completion of the modern office building, designed by O'Dell, Hewlett and Luckenbach of Birmingham, Mich., is scheduled for early spring.

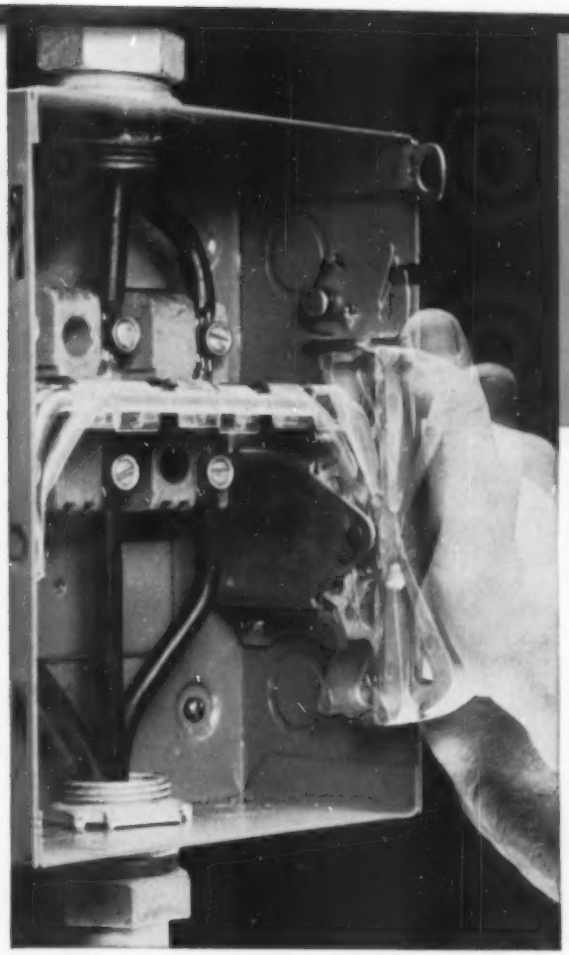
* * *

THE Youngstown Sheet and Tube Company of Youngstown, Ohio will build a modern, new three-story general office building, it has been announced by J. L. Mauthe, president.

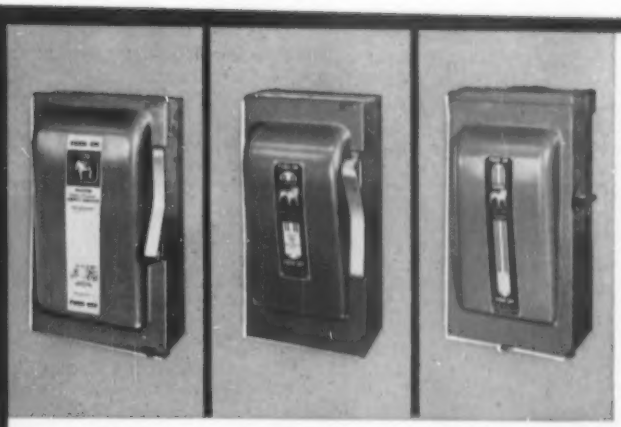
It will be constructed on a 52-acre plot and should be ready for occupancy late in 1957. The building will be completely air-conditioned and have a total floor area of approximately 183,000 square feet.

Mr. Mauthe indicated that present office facilities in the Stambaugh Building had become inadequate for the company's growing employee force. He said that the new building would provide ample space for future expansion.

**"Herbie, come on over! Lana's giving me enough juice to run my drill press.**



The positive arc-restricting switching action of BullDog's Clampmatic Vacu-Break Safety Switches is shown in the above demonstration photo of the switch interior. In all normal operation, the switch box door is closed.



**MASTER CLAMPMATIC VACU-BREAK**—Unequaled for quality and performance. Acts as disconnect or service entrance switch. Fills applications up to 1200 amps.

**JUNIOR CLAMPMATIC VACU-BREAK**—Deluxe general-purpose switch at an exceptionally low price. The complete line ranges in ratings from 30 to 600 amps.

**RAINTIGHT CLAMPMATIC VACU-BREAK**—Provides complete protection from rain, snow and sleet. Complete line ranges in ratings from 30 amp to 200 amp sizes.

# Switch with Security!

## INSTALL BULLDOG'S BIG 3 VACU-BREAK SAFETY SWITCHES

## Greater safety . . . longer life . . . no costly callbacks!

With BullDog Safety Switches you provide real extras—in safety, in performance, in longer life. The three types shown—Master, Junior and Raintight—cover a wide range of applications, meeting your client's needs with greater efficiency.

They feature these *Big 3* BullDog exclusives: (1) Vacu-Break® arc control, (2) Clampmatic® action, and (3) dependable switch mechanism.

The Vacu-Break control smothers arcs, minimizes pitting and burning. The Clampmatic action provides bolt-tight contact pressure. The BullDog switch mechanism *guarantees* positive switching security.

A switch to BullDog is a switch to real customer satisfaction . . . real profits. Consult your qualified electrical distributor or BullDog field engineer, or write BullDog Electric Products Co., Detroit 32, Mich.

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IF IT'S NEW . . . IF IT'S DIFFERENT . . . IF IT'S BETTER . . . IT'S **BULLDOG**

**ELECTRIC PRODUCTS COMPANY**

*A Division of I-T-E Circuit Breaker Company*

*Export Division:* 13 East 40th Street, New York 16, N. Y. • *In Canada:* BullDog Electric Products Co. (Canada) Ltd., 80 Clayson Road, Toronto 15, Ont.

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2930 Commerce St., P.O. Box 1725
**Houston, Texas**

**WILSON ELECTRICAL EQUIPMENT CO.**
101 E. Maple St.
**San Antonio, Texas**

**STANDARD ELECTRIC MFG. CO.**
2401 Federal St., P.O. Box 1138
**Dallas 1, Texas**

**WALKER ELECTRICAL CO., INC.**
125 Bennett St., N.W., P.O. Box 8, Sta. D
**Atlanta, Georgia**

# News about people

**C. Hamilton Moses,** chairman of the board of directors of **Arkansas Power & Light Company** and a prominent figure in the state's industrial life for more than fifteen years, has announced his retirement from the company.

**R. E. Ritchie,** president of AP&L since 1952, succeeds Mr. Moses as chairman of the board. He will continue to serve as president. Mr. Moses will return to the practice of law as member of the firm House, Moses and Holmes. It was from this firm that Mr. Moses went to the presidency of Arkansas Power & Light Company upon the death in 1941 of Harvey C. Couch, southwestern utility builder.

Mr. Moses, who is 69, indicated that the physical demands of the corporate office and his vigorous campaign to develop Arkansas as president of the Arkansas Economic Council-State Chamber of Commerce, had dictated his decision to return to the more leisurely life of a lawyer.

**The General Electric Company** has announced the election of **Carter L. Redd** as commercial vice-president for the Southeastern District, effective immediately.

Mr. Redd, who has been district apparatus sales manager in Atlanta for 11 years, will succeed **Claud J. Hendon** who will retire at the end of the year. Mr. Hendon, commercial vice-president since 1946, requested retirement following a series of recent illnesses. He will continue to serve the company as a consultant until his retirement is effective.

As commercial vice-president, Mr. Redd will direct regional customer

**Carter L. Redd**

relations activities and serve as company spokesman for 92 G-E departments in a seven-state area comprising Georgia, Alabama, Mississippi, Florida, Tennessee, and North and South Carolina.

A native of Martinsville, Va., Mr. Redd was graduated with a degree in electrical engineering from Virginia Polytechnic Institute in 1922 and joined the General Electric Company the same year. He came to the Southeast a year later and, except for wartime service as a Major in the Adjutant General's Department and a special assignment at the Oak Ridge, Tenn., Atomic Energy Works, has served the Apparatus Sales Division ever since.

Mr. Hendon, a native of Carroll County, Ga., began his long and prominent career in the electrical in-

**Claud J. Hendon**

dustry with the Georgia Power Company in Atlanta in 1923. He joined General Electric in 1927, was appointed district manager of the Appliance and Merchandise Department in Atlanta in 1930, and subsequently served in various other departments of the company in different parts of the country. He returned to Atlanta in 1946 as commercial vice-president and during the past ten years has seen General Electric double the number of its sales and service locations in the Southeast.

In a series of new appointments in the sales department of the **Virginia Electric and Power Company, C. F. Lane,** former director of sales research, was named manager of sales research; **P. D. Lawrence,** director of industrial sales, was appointed manager of contracts; **W. R. Black,** agricultural sales director, was named agricultural development director.

**T. B. Knox** was transferred from the post of commercial engineer to director of industrial sales. Senior sales engineer **J. S. Ragland** was appointed director of commercial sales. **R. S. Gay,** a commercial engineer, was named rate research coordinator. **N. O. Wagenshein,** a commercial engineer, was named rate application coordinator. All have offices at Vepco's Richmond headquarters.

Appointment of **W. F. Lent** as vice-president in charge of manufacturing and **R. A. Millermaster** as vice-president in charge of development is announced by Philip Ryan, president of **Cutler-Hammer,** pioneer Milwaukee electrical firm.

Both Mr. Lent and Mr. Millermaster hold electrical engineering degrees from the University of Wisconsin. Mr. Lent began his career at Cutler-Hammer as an application engineer and in successive appointments was named manager at the firm's molding department and later production manager. In 1950, he became works manager and held that position until his appointment as vice-president in charge of manufacturing.

Mr. Millermaster joined the company as test engineer in 1927. In 1933, he was named development supervisor, assistant manager of development in 1948, and in 1952, manager of development, the post he held at the time of his appointment as vice-president in charge of development.

Both Mr. Lent and Mr. Millermaster hold a considerable number of patents in the electrical field.

**J. B. Nicholson,** formerly a sales representative in **National Electric Products Corporation's** Philadelphia office, has been named Atlanta dis-

**J. B. Nicholson**

trict manager for the firm, it was announced by vice-president in charge of sales **R. C. Bennett, Jr.**

In his new position, Mr. Nicholson will supervise the marketing of all National products including wires, cables, conduit, electrical raceways, and accessories.

Mr. Nicholson joined National Electric Products Corporation in 1948 as service manager in the Philadel-

Houston, Texas

San Antonio, Texas

Dallas 1, Texas

Atlanta, Georgia

Saw Mill Parkway in Westchester County, New York, was the hardest hit of all thoroughfares. HAPCO Aluminum Poles were swamped with flood waters from the overflowing Saw Mill River, yet remained in service without special maintenance. Note luminaires are still in service.

# HAPCO Aluminum Poles Stand Firm in Heavy Flood

When the year's worst storm hit, dashing seven inches of rain in a three day period on the Yonkers, New York area, parkways were swamped, roadbeds demolished, bridges washed out.

Lighting losses were kept to a minimum because highway planners specified HAPCO Aluminum standards and brackets. HAPCO Aluminum lighting equipment retains its original strength and beauty under the most adverse weather and atmospheric conditions. It requires no initial or maintenance painting, offers the highest resistance to rust and corrosion.

Since HAPCO poles are lightweight, they install faster, easier, you begin saving money as soon as you buy. There is a HAPCO pole designed for every outdoor lighting application. Complete information is presented in Catalog HAL-754. Write for your copy today.

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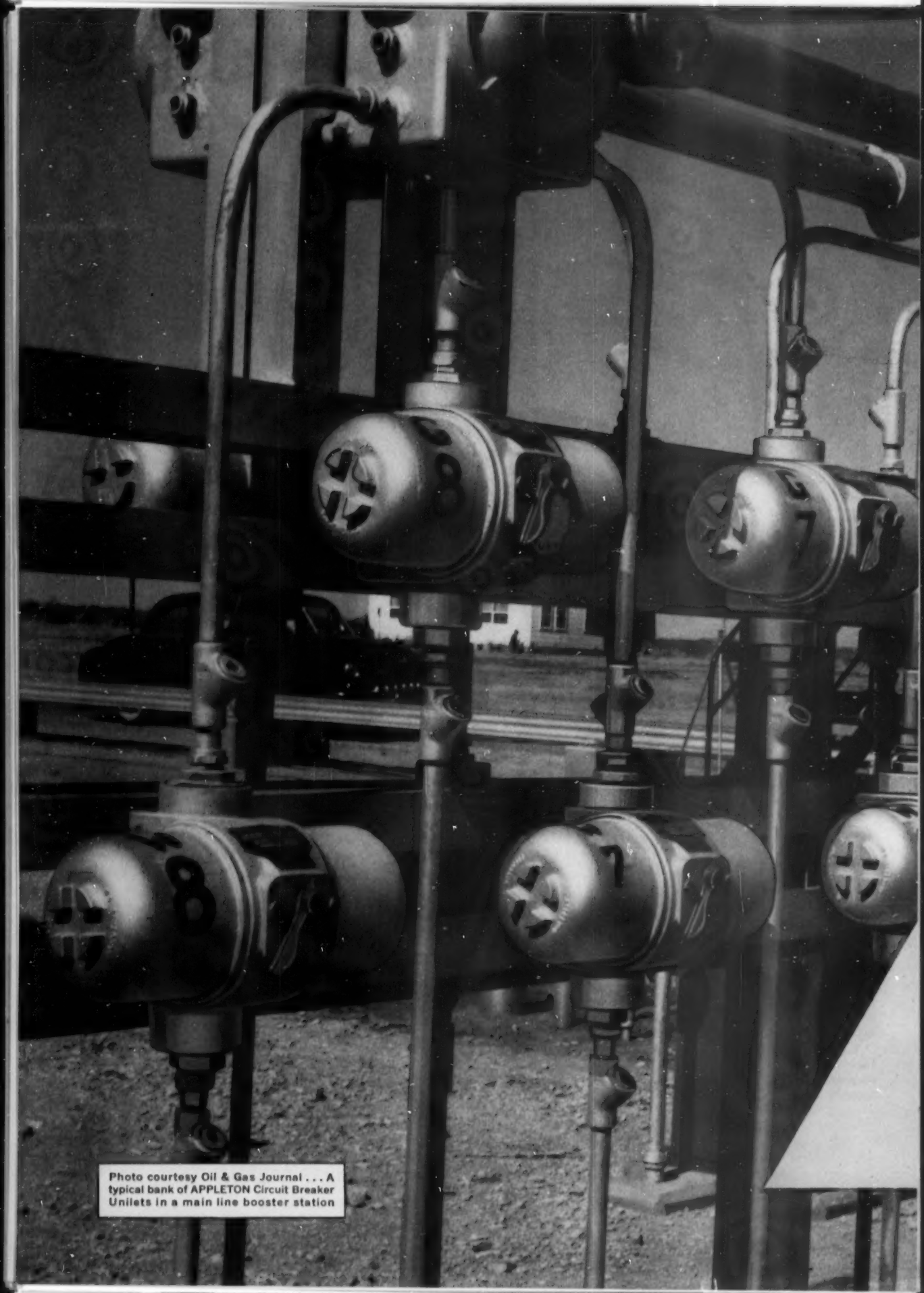

Photo courtesy Oil & Gas Journal . . . A typical bank of APPLETON Circuit Breaker Unilets in a main line booster station

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phia office. He was later transferred to sales.

Mr. Nicholson attended Temple University and the University of Pennsylvania.

**Clyde H. Wood** has been named general sales manager at **Bryant Electric Company,** a subsidiary of Westinghouse Electric Corp.

According to L. N. Goodell, general manager, Mr. Wood's appointment is effective immediately. He succeeds **Harold Hey,** who retired.

Mr. Wood, who recently completed an advanced management course at the University of Hawaii, comes to

**Clyde H. Wood**

Bryant Electric Company from San Francisco, where he has served as Westinghouse agency and construction manager for the Pacific coast region since 1941. He joined Westinghouse in 1929 after receiving a degree in electrical engineering from Washington State College and has held district sales positions in Indianapolis and Seattle.

**Thomas J. Farrahy, Jr.,** has been appointed assistant manager of the industrial advertising and sales promotion department of **Westinghouse Electric Corp.,** it was announced by R. F. Gomber, manager of the department.

Mr. Farrahy, formerly division manager in charge of electric utility and defense activities for the industrial advertising department, succeeds **O. C. Kebernick** who has been named administrative assistant to the manager of commercial atomic power activities for Westinghouse.

A native of New York City, Mr. Farrahy was graduated in 1947 from Carnegie Institute of Technology with a bachelor of science degree in management engineering. He joined Westinghouse in November, 1947, as an advertising assistant. In April, 1948, he was named sales promotion representative in the company's New York office, a position he held until August, 1952 when he returned to Pittsburgh headquarters as advertising staff representative. He was appointed division manager in October, 1954. Mr. Farrahy is a member of the planning committee of the Industrial Electrification Council.

Two promotions and a new appointment have been announced by T. R. Fuller, sales manager, **Thomas Industries Inc.,** Louisville, Ky.

**Robert D. Burns, Jr.,** has been promoted to assistant director of merchandising and will assist Otis Zumwalt, director, in all phases of product development for all divisions of Thomas Industries Inc. Mr. Burns, who joined the firm in 1950, had been serving as assistant sales manager for the Moe Light — Star Light Divisions.

The other promotion places **John Kanies** as assistant to the sales manager of the Lighting Fixture Sales Department. Mr. Kanies, who joined the firm in 1953, has been transferred to the Louisville home office from the Hopkinsville, Ky., plant of Thomas Industries, where he was manager of the Sales Service Department for the Moe Light — Star Light Division.

Replacing Mr. Kanies as Moe-Light — Star Light sales service manager is **Robert Head,** who has had field selling experience as well as nine years experience in sales service work. Prior to joining Thomas Industries Inc., Mr. Head was associated with the James Manufacturing Co., Fort Atkinson, Wis., and the Schlueter Manufacturing Co., Janesville, Wis.

**Milton O. Hollis,** executive vice-president of **Raybro Electric Supplies, Inc.,** has announced two new appointments within the organization. **William T. (Bill) Brown,** former Miami branch manager, was appointed supply sales manager for the Florida electrical wholesaling company, with headquarters in Tampa; and **Jack C. Key,** former assistant manager at Miami, was named branch manager to succeed Mr. Brown.

Bill Brown, a native of Tampa,

**William T. Brown**

first joined Raybro Electric at its headquarters in Tampa, 1937, starting in the warehouse shipping department.

In August 1951, Mr. Brown was appointed manager of Raybro's branch operation in Orlando. Then, the following October, he was named Miami branch manager, which position he held until his most recent promotion.

Jack Key, newly appointed manager of Raybro's Miami branch, first

**Jack C. Key**

became associated with Raybro Electric Supplies at its Miami branch in April of 1940.

Mr. Key was named as assistant manager at Miami in October 1951. Upon Bill Brown's transfer back to Raybro's Tampa headquarters, Jack Key succeeded him as Miami branch manager.

The election of **Sherwood DeWein** as vice-president of **Pierce Renewable Fuses, Inc.,** has been announced. He joined Pierce in 1937 and has been responsible for office and plant management. In his new position he will continue to carry on some factory management responsibilities and will assist in formulation of sales policy.

Dan E. Dunne, president of the **Penn-Union Electric Corp.,** of Erie, Pa., has announced the appointment of **Morris Brenner** as chief engineer. He will be in charge of all engineering activities.

Before joining Penn-Union Mr. Brenner was with the Burndy Engineering Co., Norwalk, Conn., where he was engaged in the engineering of electrical connectors. He has recently been acting as staff advisor to the asst. chief engineer at Burndy and as a special consultant to the copper industry. Mr. Brenner has ten years of experience in connector application and design, and in the training of technical personnel.

He is the author of over twenty engineering articles and papers appearing in leading technical and professional journals.

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1956 EDITION

PRICE $2.50

***Providing Essential Buying Information for Southern Wholesalers and Utilities***

In compiling this Directory, we have endeavored to furnish the most complete listing possible of all electrical manufacturers in alphabetical order together with their Southern and Southwestern representatives.

For convenience, a number of manufacturers have included cross - reference advertising on their products. This extra service will help locate special facts and specifications and other pertinent product data. So far as we know, this is the first Directory of its kind ever published for the Southern electrical trade.

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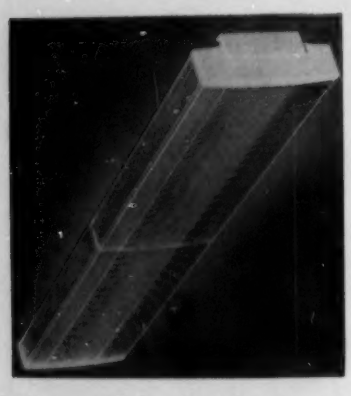
# New products

## Commercial fixture features prismatic controlled light

HOLIDAY, an all-new, enclosed, surface mounted commercial fixture, is described by Day-Brite Lighting, Inc., 5411 Bulwer Ave., St. Louis, Mo., as providing "the ultra comfort of prismatic controlled light." The hinged 4-foot enclosure incorporates two in-



jection molded prismatic elements. Lens control provides sufficient upward component to light the surrounding ceiling area.

Holiday was designed specifically for application in low-ceiling areas. It is ideal for schools, offices, stores, under balconies, and in modern industrial areas involving critical seeing tasks. It is equipped with Rapid-Start ballasts and can be furnished as 4-foot units with ends, 8-foot units with ends, and 8-foot fill-in section with coupling.

*For additional data, ask for item P1016, using the coupon on page 84.*

## Major design improvements in three-way light bulbs

THREE major developments in the design of three-way light bulbs, which will permit refashioning and streamlining of portable lamps, and which will result in improved lighting in the home, have been announced by Westinghouse Electric Corp., Bloomfield, N. J.

At the same time, the company announced the addition of a new light bulb to its line of three-way bulbs. The new bulb is a 100/200/300 watt size but is much smaller in overall dimensions than previous ones of the same wattage. In addition, it is made with the small household-type medium base.

Westinghouse has also achieved a substantial reduction in the size of its other three-way bulbs, according to Charles E. Erb, general sales manager of the Lamp Division. The smaller bulb sizes will permit greater flexibility of use of three-way bulbs, and in addition will result in an improved appearance.

Another important feature of the new bulbs is a newly designed filament structure which produces considerably more light. This new filament, developed by Westinghouse engineers, results in 10 to 15 per cent more light with no increase in cost.

Mr. Erb announced that all Westinghouse white three-way light bulbs are now being produced with the exclusive Eye Saving coating. This electrostatic coating results in a highly uniform light which reduces glare and makes seeing tasks easier.

*For additional data, ask for item P1017, using the coupon on page 84.*

## New lighting fixtures feature casual look

SLIM LINES, polished brass, and a corded rope effect combine to give a "Casual look" to a new group of lighting fixtures from Moe Light Division, Thomas Industries, Inc., 410 S. Third St., Louisville 2, Ky.

The fixtures are called "Cordette Casuals." Actually, they do have a casual feeling, but in addition there is a certain touch of luxury that

makes them equally appropriate for formal or informal room settings.

There are five different fixtures in the new group. These include a hall fixture, a wall bracket, ceiling fixture, a dramatic three-cluster hanging fixture, and an adjustable pull-down fixture.

The material that forms the shades for all the fixtures is a cotton cord impregnated with Polyester plastic resin. This provides the decorative touch and also makes the shades easy to clean.

"This new group of lighting fixtures is a perfect combination of informality with traditional warmth that ties in with the growing trend of top decorators to transitional styling," Robert Heckman, Moe Light designer, explains. "The stark, almost sterile, room-interiors so popular just a few seasons ago, have been replaced by the more livable concept of adding warmth in materials and design to today's rooms."

Mr. Hackman further pointed out that the clean-cut lines of these new fixtures permit them to be used to decorative advantages in rooms decorated in any period of furnishings.

*For additional data, ask for item P1018, using the coupon on page 84.*

## Ceiling fixture display available to retailers

A NEW 4-foot by 6-foot ceiling fixture merchandiser has just been released by Imperial Lighting Products Co. of Latrobe, Penn. This unit is

being offered to all wholesale and retail outlets handling Imperialites on a basis whereby the initial cost is paid for over a short period of time by extra sales of the lighting fixtures displayed.

*For additional data, ask for item P1019, using the coupon on page 84.*

## New type fluorescent gives full prismatic control

A TWIN-TUBE, ceiling-attached luminaire, called Realite (trademark), has been introduced by Holophane Co., Inc., 342 Madison Ave., New York 17, N. Y. Its new type, total prismatic enclosure, Prismalume (trademark), introduces a new concept in fluorescent lighting.

Prismalume is a precisely molded element which controls light in all directions and provides a high level of downward light and an indirect component along the ceiling, while eliminating all glare from the direct viewing zone.

Realite is a versatile unit with shallow compactness of well balanced design that integrates smoothly with most modern architectural styles. The light controlling element has a pleasing crystalline surface texture both when lighted and unlighted. Realite accommodates two F40T12/RS fluorescent lamps in each four foot length. The unit comes in four and eight foot lengths which, when ganged to-

# Quality Control at Allis-Chalmers

## "Measuring" paint for long transformer surface protection

● Magnetic gauging of paint coverage is part of Allis-Chalmers way of insuring a corrosion-resistant finish on each distribution transformer. Painted tanks are gauged at several points to make certain they have the specified paint thickness when finished.

Through the Allis-Chalmers hot-spray painting process, solids percentage is increased, reducing solvent wash action on corners, increasing actual paint thickness at critical areas.

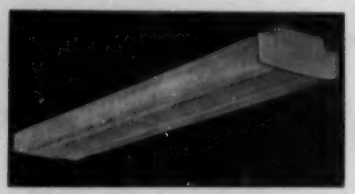
**For all the information on quality control at Allis-Chalmers** . . . *and what it can mean to you, call the Allis-Chalmers office near you or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin, for Bulletin 61B8355.*

**ALLIS-CHALMERS**

A-5045

gether, forms continuous runs without transverse supports interrupting the smooth lines of these runs. Each section can be installed directly on the ceiling by means of mounting straps. Realite is also available with pendant hangers.

Modern offices, stores, classrooms, laboratories and industrial areas requiring high level illumination are



natural locations for the unit. It is ideal for low ceiling areas where recessing is not practicable or desirable.

The lightness and strength of the Realite allow installation economies in new construction and reduces costs in old buildings. Maintenance costs are minimal, for the luminaire is easily cleaned. The enclosure possesses excellent dimensional stability, is light weight and shatter-free, an additional advantage where safety is a factor.

Each four foot hinged section of the Realite unit incorporates two 24" Prismalume held firmly in position in a light steel door which hinges onto either side of the fixture and can be completely removed by lifting out of the hinge grooves. When closed, the door is held in position with two spring catches. All metal parts of Realite are rust inhibited and finished in a hot bonded white enamel.

*For additional data, ask for item P1020, using the coupon on page 84.*

## Improved floodlight features new faceted rear reflector

A NEW, improved model of the General Electric L-69 general purpose floodlight has been announced by the company's Outdoor Lighting Department, Hendersonville, N. C.

G-E lighting experts say the new lightweight unit, designated the L-69A, will provide better performance and greater flexibility than its predecessor. In addition, they point out, the L-69A produces more light per unit, more beam lumens per watt, and higher uniform beam candlepower than did the L-69.

The new unit is suitable for a wide variety of sports and recreation, commercial, railroad and transportation, and industrial applications.

One outstanding feature of the floodlight is a new faceted rear reflector — the only such reflector now being used in floodlighting — which combines with the front reflector to provide higher average maximum beam candlepower and optimum beam candlepower distribution. G-E engineers say the optical design of the reflector makes possible the projection of more lumens per watt than any other comparable floodlight. They point out that a new manufacturing process has, for the first time, made possible economical production of a faceted floodlight reflection.

The L-69A is constructed to allow for the selection of any one of three beam spreads for a specific application. The unit is available in any one of three widths — wide for the greatest dispersion of light, medium for middle-range illumination, and narrow for concentrated beam widths.

The unit's newly-designed socket and housing assembly makes possible a free circulation of air, thereby reducing temperatures within the housing and at the same time, lessening the amount of heat conduction to the terminals. The design retains the

spun-sealed feature which helps keep the interior clean and virtually eliminates glassware breakage.

The sturdily-constructed, 17 pound aluminum unit may be quickly and easily installed by a simple two-bolt mounting for horizontal positioning, or by a built-in wrench for vertical positioning. An accurate V-notch sight and easy-to-read vertical and horizontal degree scales simplify installation and aiming of the floodlight. The unit is readily accessible for cleaning and maintenance.

*For additional data, ask for item P1021, using the coupon on page 84.*

## Fluorescent converter gives high frequency power source

DESIGNED to meet the need for a reliable, compact, rugged source of high-cycle power for fluorescent lighting service, the fluorescent lighting converter has been developed by Georator Corp., Manassas, Va.

Unit consists of a "Nobrush" high frequency generator, direct mounted on the frame of a continuous duty, lubricated-for-life, induction motor. Direct mounting obviates couplings and eliminates bearings other than those in the motor itself. Exciter is not necessary and is not furnished.

Complete converter unit takes practically only room normally taken by motor alone, runs cool, has high conversion efficiency and will ordinarily require no maintenance attention. A popular unit delivers 840 cycles at 400 volts, with total output of 30 kva. Three independent phases are provided, each center-tapped and grounded to meet Underwriter's requirements. Wave form has high harmonic content to give improved performance for fluorescent lighting service.

By use of capacitor ballasts for maximum economy in fixtures and with proper correcting devices, unit will automatically hold output voltage within required limits without regulator. Self protecting characteristics of machine prevent damage in event of short circuit and obviate some of the protective devices that would otherwise be required in installation.

"Nobrush" generator used in unit has unusual degree of immunity to damage by grit, moisture or overload. Generates no RF disturbance. Similar units available for 600 volt operation or with 400 cycle output.

*For additional data, ask for item P1022, using the coupon on page 84.*

## Suspension device combines flexibility and styling

FLEX-STEM, a new exclusive suspension device designed by Globe Lighting Products, Inc., 16 E. 40th St., Brooklyn, N. Y., offers flexibility as well as beauty to fixture suspension. Flex-Stem enhances the beauty and design of the fixtures in Globe's new Continental collection. In fact, the new device becomes an integral part of the design and, at the same

time, conceals unsightly wires and suspension chains in its handsome, flexible casing.

The flexibility of the stem makes Flex-Stem the perfect hanging device. The fixture can be easily tilted for cleaning, easily lowered or raised to suit the decor. In addition, its flexibility compensates completely for

uneven or slightly pitched ceilings. But a Flex-Stem fixture is ideal for ceilings of any type, and its adjustability makes it ideally adapted to any type of decor.

The Flex-Stem feature is available in multiples of four-inch sections which are easily added or removed so that fixture can be used to create an ideal lighting arrangement for a dining area at the lower level, or for a foyer when used closer to the ceiling. Flex-Stem is made of gleaming polished brass to harmonize with the overall design of each fixture.

*For additional data, ask for item P1023, using the coupon on page 84.*

### Literature now available on dual purpose fixture

THE Multi-Vent Trofferlite, the new lighting fixture-air diffuser combination, is being jointly marketed by the Pyle-National Co., 1334 N. Kostner Ave., Chicago 51, Ill., and the Benjamin Electric Manufacturing Co., Des Plaines, Ill.

Because the fixture uses the unique air pressure displacement principle instead of high velocity inpection,

temperatures are easily balanced, and stay uniform throughout the area.

The Multi-Vent Trofferlite reduces the number of fixtures needed. Where it was necessary to buy troffers and diffusers before, now it is necessary to install only this one unit.

This new dual purpose fixture is the subject of a booklet, available from either company or their representatives. It contains cutaways, exploded views and installation procedure. In addition, there are illumination and sound level charts, and all data pertinent to proper selection of this new Multi-Vent Trofferlite.

*For additional data, ask for item P1024, using the coupon on page 84.*

### Multi-unit lighting patterns featured in new recessed line

THE Art Metal Co., 1814 E. 40th St., Cleveland, announces its new line of recessed Eliptisquares which are grouped into two-light and four-light patterns in order to provide a greater flexibility of illumination in a given area.

Heart of the new multi-unit light-


KILLARK FITTINGS
offer you
3-WAY STRENGTH
on every job!

1 Strength in METAL
Non-rusting aluminum plus a special blending of alloys for greater malleability and resistance to shock and strain **far beyond** on-the-job needs.

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## FOR E.M.T. Concrete-tight

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SIZES FROM ½" to 2"

SIZES FROM ½" to 2"

SIZES ½" ¾" 1"

SIZES ½" ¾" 1" 1¼"

SIZE ½"

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ing patterns is the Amcolens, clear prismatic glass which directs light in a manner most flattering to objects below. The new multi-unit lighting patterns are available with either flush Amcolenses or drop Amcolenses, whichever is suitable to the architectural motif of the interior.

Only one plaster frame need be used with these units, greatly simplifying installation time and labor. Flexibility of illumination can be achieved through individual or multiple switching control. The Art Metal recessed two and four-light patterns are ideal for schools, stores, lobbies, offices and most commercial applications.

*For additional data, ask for item P1025, using the coupon on page 84.*

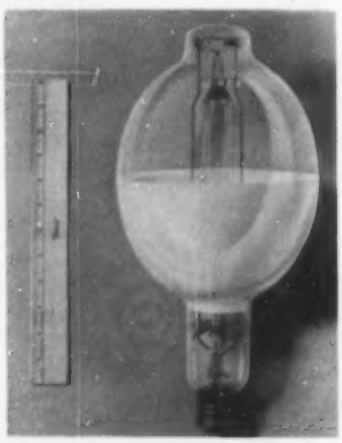
## New lamp interior reflector directs more light downward

THE General Electric Company Lamp Division, Nela Park, Cleveland 12, Ohio, has announced a new, 1000-watt mercury lamp with an interior phosphor reflector which directs two-thirds of the light downward.

The lamp, designated G-E H1000 RC 15, is in the same group of lamps which includes the H1000 A15, a clear glass 1000-watt mercury lamp, and the H1000 RC 15, a phosphor coated, 1000-watt mercury lamp with improved color.

The new lamp has phosphor coating on the base half so that two-thirds of its light output is directed down and one-third up. Thus, less light is controlled by the external lighting fixture.

G-E lighting engineers say that at a given lighting level, the cost of



lighting from the new lamp should be about 15 per cent lower than the H1000 RC 15 lamp. A lighting system using the new lamp offers better maintenance and improved distribution of light as well as some color improvement. This lamp has the same advantages and characteristics as the H400 RC1 lamp.

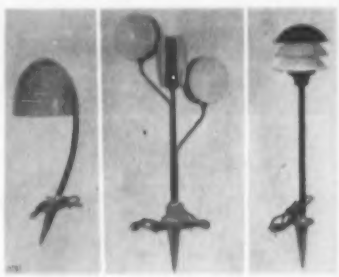
The new lamp is 15 and one-sixteenth inches long, has a mogul base, and is rated at 53,000 lumens. It will be used in medium and high mounting in industrial installations.

A companion lamp, the H1000 RC 12, will also be made. Its operating voltage is 135 volts, while the H1000 RC 15 operates at 265 volts. Both lamps will utilize the same outer bulb and will have similar light distribution.

*For additional data, ask for item P1026, using the coupon on page 84.*

## Floralites added to garden lighting line

THREE new, modern design Floralites have just been added to the line of garden, and play area lighting equipment from Steber Manufacturing Co., Broadview, Ill. Two



of the new items are equipped with attractive fibre glass shades. All have aluminum ground spikes and 10 foot weatherproof cord sets for easy installation in flower beds or lawn.

The complete Steber line of Floralites including the three new units are illustrated and described in catalog Bulletin No. 135-56 which is available upon request to manufacturer.

*For additional data, ask for item P1027, using the coupon on page 84.*

## Surface mounted line stresses flexibility

THE Modu-Glo II series, a complete surface mounted lighting line designed around a modular system of triangles, rounds, and squares, whose flexibility from an installation point of view is limited only by the imagination of the user, is now being offered by Marvin Electric Mfg. Co., 648 S. Santa Fe Ave., Los Angeles 21, Calif.

These designs were specially created to achieve an economically priced surface mounted line having decorative qualities that would be in keeping with the contemporary resurgence of decorative type lighting and, at the same time, be sufficiently clean in over-all detail to enable them to be used in practically any style home or office. The porforated side panels provide a feeling of airiness and add sparkle.

All three units are available in two

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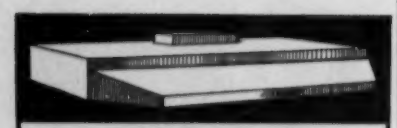

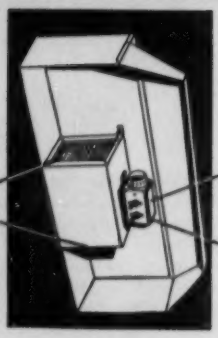


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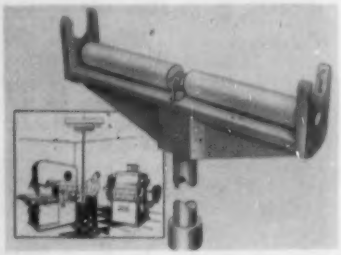
wattages (100 and 150) with either one of three diffusing elements: a molded opal drop milk white glass diffuser of exceptionally low brightness, a flat albalite milk white glass diffusing panel, or a wide angle Marco designed fresenl type lens. The three shapes were designed as modules having the same basic dimensions so that they might be used in "clusters" of identical units or in combinations to achieve a custom decorative quality.

*For additional data, ask for item P1028, using the coupon on page 84.*

### Fluorescent tube changer offers ease and efficiency

TOP maintenance efficiency is easily achieved with a completely new piece of equipment, "The Fluorescent Tube Changer" from Pattern



Products Co., P. O. Box 135, Union, N. J. This new unit reduces the risk of climbing ladders and eliminates the dangers in changing "hard-to-get-at" tubes.

Requiring but two steps to change a tube, the user simply pulls a slide to remove a burned-out tube and again pulls the slide to insert a new one. It is quick and effortless, has only 3 moving parts, is lightweight and of foolproof construction.

*For additional data, ask for item P1029, using the coupon on page 84.*

### New adjustable lights meet hospitals' need

SWIVELIER Company, Inc., 43 34th St., Brooklyn, N. Y., manufacturer of adjustable lighting products, has recently introduced its new line of universally adjustable Hospital-Lites.

Swivelier Hospital-Lites are made with the world-famous, patented Swivelier spring-tension sockets and swivels — adjust to any position and "stay put . . . at any angle!" Swivelier is confident that these new units will provide the satisfactory answer to the modern hospital's need for adjustable lights that will not drop down despite frequent adjustment and rough handling.

Most of the 14 different models in the line include the Swivelier Cool-ite Shade — a metal shade that remains cool and comfortable to the touch even after long hours of use with up to 100-watt lamp. This feature prevents burns; protects patients, physicians and nurses.

In addition, units for wall mounting are supplied with the patented Swivelier Shur-Mount plate which provides more secure mounting and quick, simple installation. Maintenance is minimized by Swivelier's exclusive Plug-Rack feature — a unique method of electrical assembly wherein the components of the unit can be connected and disconnected at will without disturbance to the electrical feed connections.

The line includes 9 wall models, 2 floor models, 2 laboratory models and one model for attachments to the hospital bed. The units can be used in patients' rooms, examining rooms, executive offices, dormitories, physicians' offices and in many other locations.

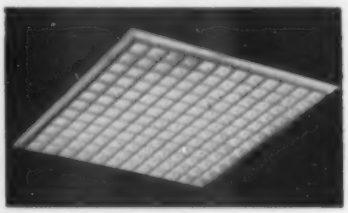
*For additional data, ask for item P1030, using the coupon on page 84.*

### Plastic louver-diffuser holds glare to minimum

A MINIMUM of direct and reflected glare, low cost and easy maintenance are provided by a unique plastic louver-diffuser enclosure for lighting fixtures announced recently by Curtis Lighting, Inc., 6135 W. 65th St., Chicago 38, Ill.

Called CurtiCell, the enclosure is the first to combine a molded cellular louver bottom and a flat top diffusing panel into a single electronically-fused unit. It is the result of more than two years of research and is the first of its kind developed.

The cellular portion, which may be either translucent white or clear plastic with frosted finish, controls direct glare. The frosted diffusing



panel reduces reflected glare. Direct light rays pass through four or more thicknesses of plastic, resulting in soft, efficient lighting without distracting brightness.

"This development is especially significant for schools, hospitals, banks, and offices, where lighting must be soft and glare-free, and where it is desirable that the lamps are not directly visible," company engineers explained.

The enclosure, made in 2 x 2-foot and 2 x 4-foot sizes, will be available with suitably dimensioned Curtis Fixtures, and large area lighting units.

Because the louver-diffuser is electronically sealed, no dirt or moisture can enter. To clean, the lightweight

enclosure (4 ounces per square foot) is lifted from the fixture and submerged in a lukewarm mild detergent solution. All formed corners are rounded, eliminating dust-catching areas and adding to the plastic rigidity.

The vinyl chloride material used is shatter-proof, under normal conditions, and self-extinguishing. Vacuum molding forms the louver portion into a cellular pattern with cells 1¾ inches square and ⅞ inch deep.

*For additional data, ask for item P1031, using the coupon on page 84.*

### New porcelain reflectors feature apertured neck

ELECTRO Silv-A-King Corp., 1535 S. Paulina St., Chicago, Ill., announces availability of their Standard Dome, Shallow Dome, Deep Bowl Rectangular Angle, and Symmetrical Angle incandescent reflectors finished in all-white porcelain with apertured neck. These reflectors are in addition to the Solid Neck reflectors finished green outside, white inside.

The trend toward lighter, brighter and more cheerful manufacturing areas has initiated the design of the

all-white porcelain finished incandescent reflector. This finish and the apertured neck has these advantages — reduces brightness contrast between ceiling and work plane area, improves seeing comfort by reduction of brightness contrast between inside and outside of unit resulting in greater employee efficiency, increased cooling effect of slots in neck steps up overall efficiency of unit, chimney action prevents dust accumulation on lamps and reflector, and improved appearance stimulates better housekeeping.

These new Electro Silv-A-King reflectors are of one piece steel construction, finished inside and outside with white porcelain enamel on the steel, which seals the fixture against rust and corrosion.

*For additional data, ask for item P1032, using the coupon on page 84.*

### New fixture support designed for economy

A FLUORESCENT fixture support that will save builders and electrical contractors 50 per cent on material and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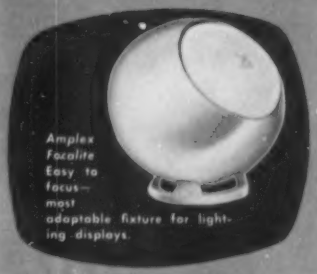

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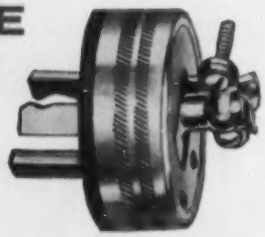

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labor costs is now being manufactured and marketed by the Texas Apparatus Co., 2300 Congress St., Houston, Texas.

The "Chanel" fixture hanger may be used where any other type hanger is used with advantages over conventional hangers. This hanger may be installed rapidly. The fixture applies no weight on the ceiling but instead is self sustained. With TACO's fixture hanger, the fixtures and ceiling boxes are supported by the ceiling support system rather than by the ceiling itself.

Contractors may add hangers easily with no removal of support systems. This is convenient in cases where architects wish to alter designs.

The TACO "Chanel" hanger quickly locks in place by tightening a nut. Vertical adjustments are facilitated with the hanger because continuous threads on the stud allow for simple up and down variations.

*For additional data, ask for item P1033, using the coupon on page 84.*

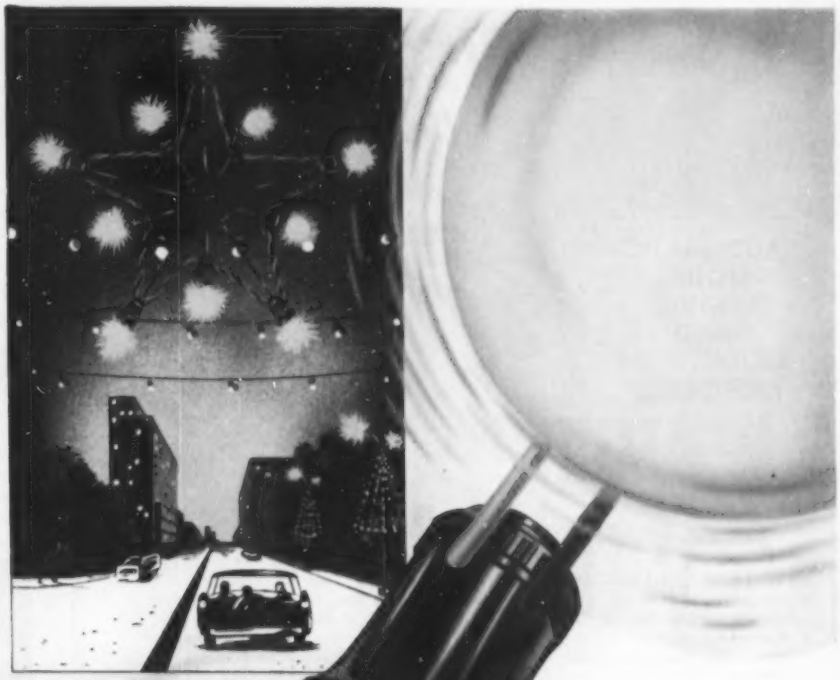
### Aluminum uplight reflector for industrial applications

A NEW ALUMINUM "Uplight Reflector" has been designed by Abolite Lighting Division, Jones Metal Products Co., West Lafayette, Ohio. It meets the need for greater uplight from the new color corrected mercury vapor lamps, H400-RC1, and H1000-C15, used in high bay lighting.

The use of this new lighting system is especially recommended for high factory bays, power plants, foundries, truck and rail shipping

depots, warehouses, and similar locations where efficient distribution of necessary light is a problem.

The new Abolite "Uplight Reflector" measures 24 inches in diameter. It utilizes a radically new open top design, which results in 18 per cent uplight when used with the H400-RC1 lamp, and 16 per cent with the H1000-C15. This feature maintains proper balance of light between the lamp and the ceiling, thus reducing harsh, glaring contrast. In addition,



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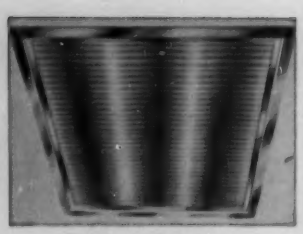

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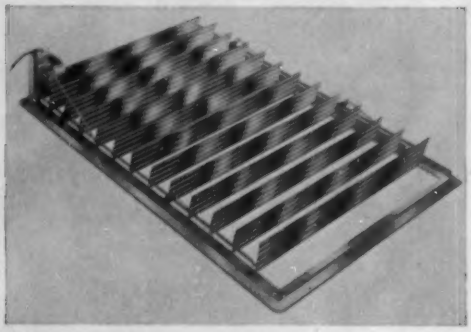

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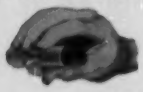
**SNAPS TIGHTER,**  **HOLDS ITS GRIP**

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**WHY it's better**—The B-I SNAP STRAP has the "hold bump" at the open end of the bracket—really grips—resists slips like an alligator wrench! Ribbed bracket adds to the snap, provides rigid contact support of the conduit!

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**BLACKHAWK INDUSTRIES**
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the manufacturer claims that this Uplight fixture improves shielding of the lamp, which further reduces glare in line with modern lighting practice.

Abolite aluminum "Uplight Reflectors" are furnished in either socket-reflector or separable-socket (disconnecting) mounting types.

*For additional data, ask for item P1034, using the coupon on page 84.*

### Fixture line broadened with several additions

LEHROLITE, Inc., Wallingford, Conn., have broadened their fixture lines by the addition of their Nos. 895 and 896 two and four lamp line leaders with unlimited lighting application in kitchens, corridors, playrooms, porches and similar locations.

Extremely shallow, these new contemporary fixtures in their satin

brass and chrome finishes, feature safety mounting of glass and lock-seamed and welded housing. Side piercing gives luminous ceiling effect with the milk white glass providing excellent diffusion of light. Low in price — easy to install and maintain. Choice of satin brass or satin chrome finishes.

*For additional data, ask for item P1035, using the coupon on page 84.*

### General purpose fixtures feature long lamp life

CELINE, INC., of Batavia, Ill., has announced the availability of a new line of straight lamps and fixtures for general purpose lighting.

Using the exeprience gained in thousands of classrooms, where records and subjective testing are both positive, Celine has developed a line of three basic new fixtures and five new lamp sizes to accomplish line lighting with spot hanging. This means fewer outlets, fewer anchors and fewer fixtures to hang.

In combination with a new patented ballast, designed exclusively for cold cathode lighting, the new fixtures have a rated lamp life of twenty-five thousand hours. This will make them acceptable to offices and stores where modern appearance is important, and where troublesome and continual maintenance must be avoided.

Celine has prepared a brochure that

gives complete electrical and mechanical characteristics that is available upon request to the Public Information Dept.

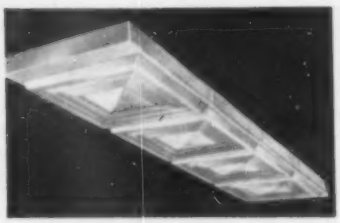
*For additional data, ask for item P1036, using the coupon on page 84.*

### Ventilated luminous diffuser in flush rectilinear modules

A DEPARTURE in low-brightness luminous diffuser design has been introduced by Peerless Electric Co., 576 Folsom St., San Francisco, in the Cadillite series of flush-mounting rectilinear modules.

The new fixture features ballasts housed in air-cooled chambers at the ends of the fixtures, reducing heat from lamps and ballasts, increasing electrical component life, yielding greater lumen output, permitting an extremely shallow case, and resulting in 3 lamp models in addition to 2 and 4 lamp series.

Cadillite also pioneers luminous side panels for the first time in a totally enclosed modular diffuser, spreading light into ceilings. Lightweight plastic bottom panels are designed to diffuse illumination evenly over a wide area, and are destaticized, dimensionally stable, cannot warp, crack or discolor. The manufacturer indicates that in addition to this original internal diminishing-squares panel design, all conventional designs and textures are available.



The Cadillite line includes 2, 3 and 4 lamp fluorescent models for 48" rapid start lamps; and 2, 3 and 4 lamp slimline models for 48", 72" and 96" lamps. The 3 lamp models will be useful as a solution for applications where a compromise between 2 lamp and 4 lamp fixtures is desired. All Cadillite fixtures may be flush mounted individually or end-to-end on any ceiling in minutes.

*For additional data, ask for item P1037, using the coupon on page 84.*

### New "speeds" of light in three-way bulb

DEVELOPMENT of a new three-way light bulb for portable lamps which produces three new "speeds" of light, and is geared to meet the exacting demands of today's television viewing and human eyes, has just been announced by General Electric Lamp Division, Nela Park, Cleveland 12, Ohio.

The new "high-low" is actually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three light bulbs in one: a 30-watt; a 200-watt; and a 230-watt. Marketing tests conducted in three large metropolitan areas "to feel the public pulse" reveal that this combination of lighting levels has marked preference over the present 50-100-150 three-lite bulb, according to General Electric.

The 30-watt low level, it has been found, provides an excellent lighting situation for television viewing. It also serves as a practical night light. The 230 and 200-watt levels of light, the survey indicates, make for easier and more comfortable reading, studying, or sewing.

Like the more familiar 50-100-150-watt size, the new three-lite is equipped with a bulb and standard base identical with that of the 50-100-150-watt type. The new "high-low" is intended for use in portable floor and table lamps having three-way switches. By a single turn of the switch, lighting levels can be changed from a new low to an eye-guarding high without need for going through an intermediate stage. A second turn of the switch brings both the 30-watt- and 200-watt filaments into use for a maximum light output of 230 watts.

*For additional data, ask for item P1038, using the coupon on page 84.*

## Shallow height ballast line for slimline lamps completed

A COMPLETE line of shallow height ballasts for 430 milliampere T12 slimline lighting systems is now available from the General Electric Company's Ballast Dept., Schenectady 5, N. Y. Latest in the shallow height line is a fluorescent lamp ballast for operation of one eight-foot instant-start lamp that gives protection against end-of-lamp-life rectification damage.

All ballasts in the now complete shallow height line are 1-25/32 inches in height and represent a weight reduction of from one to more than four pounds. This particular height, according to Gordon C. Harvey, manager of engineering for the department, is an optimum dimension, since it does not add height to fixtures with the standard 1½-inch lamps. Previous ballast height for most slimline ballasts was 2⅝ inches.

"The lower height enables manufacturers to standardize on a shallower fixture troffer and makes possible greater design flexibility in fixtures and in architectural planning," Mr. Harvey said. "These reductions offer considerable savings in material, packaging, and shipping costs."

Designed for operation of one 96T12 instant-start lamp, the newest ballast in this shallow height line incorporates what is believed to be the industry's first efficient single-lamp lead circuit for the 8-foot 430 ma lamp.

*For additional data, ask for item P1039, using the coupon on page 84.*

## Ring fixture features non-twist stem assembly

A NEW THREE-RING pendant-type incandescent concentric ring fixture has been announced by The H. E. Williams Products Company, of Carthage, Mo.

Measuring 30 inches in length, 18 inches in diameter, it has a positive-action, non-twist stem assembly and

45-degree swivel support, and a heavy-duty black porcelain socket, 1600 watts and 600 volts. The aluminum stem can easily be shortened without threading. It bears the IBEW label and is approved by Underwriters' Laboratories.

Fixture rings are made of steel and finished in eggshell enamel, Catalog Number 5000. Also available with close-mounting stems, height 14"; Catalog Number 5300.

*For additional data, ask for item P1040, using the coupon on page 84.*

## Duplex receptacle with individual lids

NOW AVAILABLE for the first time, a duplex grounded weather proof receptacle that provides each face of the receptacle with its own lid, permitting one side of the receptacle to be used and the other side completely sealed against the elements, is being manufactured by the Slater Electric & Manufacturing Co., Inc. of Woodside, L. I., N. Y.

This excellent weatherproof device (Catalog No. 3750) is ideal for outside use on homes and is highly recommended for use in factories, schools, institutions and industrial installations where water, dirt and dust create a hazard.

This compact weather-proof unit provides complete protection. It consists of a Slater No. 3200 intermediate grade, Nema and ASA grounding receptacle secured in a rugged brass


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plate that has a sprayed aluminum finish. The receptacle is sealed against the elements by tight-fitting lids made of smooth finish cast aluminum. The lids are actuated by a stainless steel spring which will not rust.

*For additional data, ask for item P1041, using the coupon on page 84.*

### Surface accent lighting featured in new line

A NEW LINE of incandescent lighting fixtures has been added by The Miller Company, of Meriden, Conn.

Included in the line are steel and Alzak aluminum concentric ring luminaires as well as a broad variety of downlighting fixtures including both surface and recessed units.

For surface mounted accent lighting, the line includes single and twin bullet spots with swivels and/or goosenecks in

brushed satin aluminum finish (matte finish in coral red, gray-green, or oyster shell on request). Five types of satin aluminum drums in pipe and tapered types with Alba glass or Holophane lens provide application flexibility for a variety of wattages and lamp types.

Semi-recessed units with skirts of perforated or polished aluminum complement a line of 8 recessed high hat units having a variety of louvers, lenses, and apertures available in both fixed and adjustable lamp styles including gimbal ring and eyeball fixtures.

Accent lighting is an important part of contemporary commercial interior lighting practice to create atmosphere and mood, to attract attention, to emphasize form and color and to provide high illumination where needed.

*For additional data, ask for item P1042, using the coupon on page 84.*

### Lighting layout kit available from G-E

A NEW lighting layout kit — a "Plan-It-Yourself" device — has been developed by General Electric's Large Lamp Department, Nela Park, Cleveland 12, Ohio, for use by the lighting industry.

The kit, which is planned for the use of electrical contractors, distrib-

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utor salesmen and lighting men as well as utility lighting men, makes possible the quick calculation of the number of fixtures, rearrangement of the lighting plan, and a final paste down of the plan.

It has been designed to help provide proper lighting for a small store, office or factory.

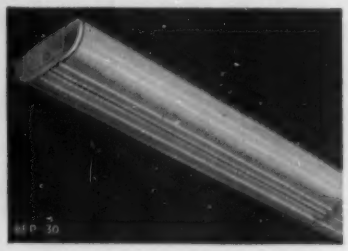
The kit includes 12 sheets of graph paper to provide a scaled floor plan, an envelope of cardboard fixture units, an envelope of pressure-sensitive fixture units for the final layout, a pamphlet on fluorescent lamps and auxiliary equipment, a pamphlet on essential data for general lighting design, and a fluorescent lighting estimator which aids in establishing the number of fixtures needed to maintain the predetermined footcandle level.

*For additional data, ask for item P1043, using the coupon on page 84.*

### Shallow lighting unit meets IES school specifications

A LOW-PRICED fluorescent lighting unit, called the Capri is announced by Benjamin Electric Manufacturing Co., Des Plaines, Ill. The Capri is a twin-lamp unit that is shallower than a length of chalk, yet meets the IES School Lighting Practice.

The new Benjamin Capri is just 3" high by 10" wide, and comes in 48" and 96" lengths for individual or continuous line installation. Its extremely trim contour helps enhance the appearance of schoolroom lighting installations, while its highly diffused illumination also makes it well suited for stores, offices and other commercial interiors. This new unit is designed for two 40-w Rapid Start



or 96" Slimline lamps. Special newly-designed sliding hangers are available so that units may be mounted under pipes or duct work.

A vent, which runs the length of the unit along its bottom, circulates air through the unit to minimize dirt accumulation. Diffusing panels are of polystyrene plastic. For easy cleaning, these panels are merely lifted out of the unit chassis, then slipped back into position. No special tools or release mechanisms are required. Lamps and control equipment are serviced from above.

Pendent mounting of new Benjamin Capri units makes it possible to provide more light toward the ceiling, as well as facilitating modernization of schoolrooms with high ceilings.

*For additional data, ask for item P1044, using the coupon on page 84.*

### Grounding receptacles now in 20 amp rating

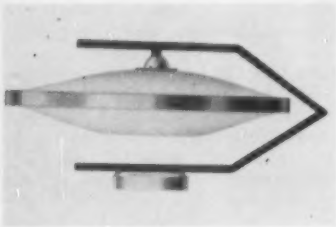
ANNOUNCEMENT of a complete new line of 20 amp grounding type receptacles and caps suitable for use whenever electrical equipment should be grounded as protection for the users, has been made by The Arrow-Hart & Hegeman Electric Co., Hartford 6, Conn.

Rated at 20 ampere, 125 volts and 20 ampere, 277 volts, these new Arrow-Hart grounding type devices are equipped with u-shaped ground blades and slots, and with green hexagonal screws for grounding terminals.

*For additional data, ask for item P1045, using the coupon on page 84.*

### The Fantasia fixture of ultra-modern design

A STREAMLINED design from Globe Lighting Products, 16 E. 40th St., New York, is the Fantasia fixture, a new lighting unit especially created for the "Home of Tomorrow." The square



shape of the globe and the abstract frame combine to make this Scandinavian inspired design the perfect lighting fixture for the most modern homemakers. Fashioned in white glass and satin brass with black trim, the Fantasia has a diameter of 16½", a 14" square body and 8" depth.

*For additional data, ask for item P1046, using the coupon on page 84.*

### Ballast designed for instant-start lamps

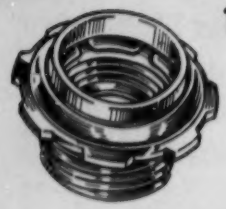
A BALLAST for instant-start lamps that gives protection against end-of-lamp-life rectification damage, has been developed by the General Electric Company's Ballast Department, Schenectady 5, N. Y.

Designed for operation of one 96T12 instant-start lamp, the ballast incorporates what is believed to be

"Easy Does It"

THAT'S HOW THE TRADE DESCRIBES

TOMIC Tap-On THINWALL CONNECTORS



Pat. No. 2458276

No. 10—½"
No. 11—¾"
No. 12—1"

JUST TAP . . . OR PUSH ON

- Pre-flexed stainless steel lock washer.
- Slips on tube with little effort.
- Does the job better, easier.
- OK in concrete slabs—perfect for cramped or corner locations.
- Makes safe, permanent vibration-proof 6 point ground around entire tube.

TOMIC SALES & ENGINEERING CO.
20000 SHERWOOD AVE. • DETROIT 34, MICH.

the industry's first efficient single-lamp lead circuit for the 8-foot 430 ma lamp.

The new ballast has no condition of abnormal operation which will shorten ballast life. Series instant-start ballast circuits, as in this new unit, assure protection from such damage, according to General Electric engineers. Lag circuit designs, however, allow high temperatures during lamp rectification, causing up to 50 per cent decrease in ballast life.

Case height of the new unit has been reduced from the superseded model's 2⅜-inches to 1 25/32-inches. Weight of this ballast is one-half pound lighter than the one it replaces.

Improved noise consistency provides better noise performance than other models of the same rating. Now available, the new ballast is also suitable for operation of one 72T12 instant-start lamp. Designated 89G-662, the CBM certified unit replaces 89G362.

*For additional data, ask for item P1047, using the coupon on page 84.*

### Pocket size indenter requires less pressure

THE Briegel Method Tool Co., Galva, Ill., has announced a new plier size indenter tool that requires less pressure, is only 10 inches long, and weighs under pound and a half.

This pocket size indenter is made possible by an unusual 3 point com-

pound leverage design with one center moving on a ball bearing that travels in a curved groove.

New and different, the #607 indenter gets into tighter places, is easier to compress and takes up less tool box space.

*For additional data, ask for item P1048, using the coupon on page 84.*

### Rubber connector bodies of neoprene composition

AN UNUSUALLY rugged new series of rubber Twist-Lock connector bodies have just been announced by Harvey Hubbell, Inc., Bridgeport, Conn. These new units are molded from an exceptionally tough neoprene composition prepared especially for Hubbell. This new material has been named Hubbell Insulprene due to its excellent insulating properties and outdoor aging characteristics.

Insulprene Twist-Lock units, avail-


ONLY ELECTROMODE Offers so much! in Automatic ELECTRIC HEAT

ALL YOUR REQUIREMENTS FROM ONE RELIABLE SOURCE
COMPLETE OR SUPPLEMENTARY HEAT

FOR HOME . . . . . .
- ✓ BASEBOARD HEATERS *Low-Level Perimeter Heat*
- ✓ WALL-TYPE AND PORTABLE *Fan-Circulating Models*
- ✓ PANEL HEATERS *Radiant Convection*
- ✓ RADIANT CABLE HEAT

WALL MODEL For bathroom or small room.

FOR INDUSTRY . . . . . .
- ✓ SUSPENSION-TYPE
- ✓ PORTABLE AND SUSPENSION
- ✓ EXPLOSION-PROOF

SUSPENSION-TYPE Solves hard-to-heat areas in the plant and isolated locations.

ONLY ELECTROMODE has the SAFETY-GRID

a completely sealed-in CAST ALUMINUM HEATING ELEMENT. All electric wires are insulated and embedded within this finned aluminum casting. Absolutely no exposed hot wires or glowing coils, and no danger of fire, shock or burn. It's the greatest feature any electric heater ever had and it is guaranteed for five years.

Around The FARM . . .
- ✓ MILK HOUSE HEATERS
- ✓ PUMP HOUSE HEATERS

MILK HOUSE HEATER Also useful for brooder pens, fruit and vegetable bins, etc.

ELECTROMODE INSTALLATIONS BENEFIT CONTRACTOR AND USER
- Full Range of Designs and Sizes for every need.
- Automatic Room Temperature Control.
- Quality Line—Made by Experienced Manufacturer.
- No Call Backs—No Servicing—No Adjustments.
- Easy to Install—Saves Time and Labor.
- Profitable Line to Handle.

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Dept. ES-106, 45 Crouch St., Rochester 3, N. Y.

Please send FREE Electric Heating File, containing specifications, illustrations, installations, prices and how to figure electric space heating. We are interested in:

☐ Home and Office Heaters ☐ Industrial Unit Heaters ☐ Farm Heaters

Name_____

Address_____

City_____ Zone____ State_____

able in 2-wire, 3-wire and 4-wire sizes, are especially designed to withstand rough, tough industrial or commercial service. The new Insulprene composition stands up under the hardest knocks and roughest abuse. In addition, it resists hot water, live steam, grease, oil, fatty acids, etc. These wear-resistant qualities make it one of the safest, most secure and long-lived Twist-Lock connectors ever produced. As a result, these units are ideally suited for such applications as welding shops, paint-spray rooms, heat-treating departments, bakeries, laundries, car-wash establishments, drive-in theaters, etc.

*For additional data, ask for item P1049, using the coupon on page 84.*

### New line of weatherproof outdoor wiring devices

WITH THE growing emphasis on the use of electricity outdoors, Royal Electric Co., Inc., Pawtucket, R. I., manufacturers of wiring devices, fuses, insulated wire and cord sets, is now offering a new line of outdoor weatherproof receptacles and switches with "flip-tite" spring-hinged covers.

Modern in design and construction, the line features non-corroding exposed parts and springs, and spring-hinged covers that tightly seal the inner components against weather and moisture. The covers open more than 90°, permitting quick and easy access to the device inside.

The line is fully described and illustrated on Catalog Sheet 2-5-56 which may be requested from the company.

*For additional data, ask for item P1050, using the coupon on page 84.*

### Wire connectors approved for 600-volt general use

WIRE NUT connectors (contractor sizes 74B and 76B), manufactured by Ideal Industries, Inc., 5097 Park Ave., Sycamore, Ill., are now fully approved for 600-volt general use and 1,000 volts when enclosed in fixtures.

They comply with requirements for circuit splices under Article 110, Section 118, of the National Electrical Code: "All splices and joints and the free ends of conductors shall be covered with an insulation equivalent to that on the conductor."

Since practically all building wire used today is rated at 600 volts, the connectors used to join these wires must also be approved for 600 volts.

"Wire Nuts" is a registered trademark of the bakelite screw-on type connectors made by Ideal Industries. They can now be used for all circuit wiring as well as fixture wiring wherever 600-volt building wire is used.

*For additional data, ask for item P1051, using the coupon on page 84.*

# Free bulletins

## *available to our readers*

A new 20-page booklet describing the universal applications of Sylvan-Aire, Sylvania's system of **wall-to-wall lighting,** has been published by **Sylvania Electric Products, Inc.,** 48th St., Wheeling, W. Va.

Attractively designed in two colors throughout, the new brochure details the advantages and uses of this Sylvania lighting system which features three-way functional treatment of sight, sound and styling. Because of Sylvan-Aire's widespread application—it can be used industrially, commercially and institutionally—the booklet is aimed at new construction and modernization in such locations as retail stores, offices, schools, banks, factories, laboratories, hospitals, art galleries, supermarkets, drafting, conference and reception rooms.

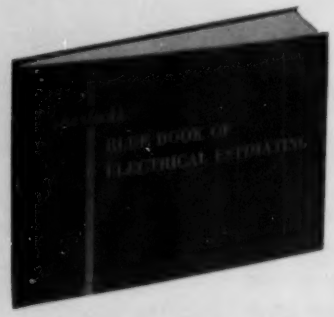
The booklet also provides installation instructions, describes special design situations, and explains how the lighting system may be installed along with other service systems such as sprinkler systems, air conditioning, telephone and electrical systems, and plumbing. Maintenance and design is explained, and technical data is furnished in an "architects and engineers specifications" section.

*For additional data, ask for item B1052, using the coupon on page 84.*

**Sunbeam Lighting Co.,** 777 East 14th Pl., Los Angeles 21, Calif., has recently released a colorful brochure illustrating their 3600 Series Sunbeam **Visionaires,** large area recessed light modules. Model and installation illustrations, descriptions, construction diagrams, mounting instructions, and illumination data charts are included in the publication.

*For additional data, ask for item B1053, using the coupon on page 84.*

**"Wires, Cables and Cords for Residential Outdoor Lighting"** is the subject of a new booklet issued by **General Electric's** Wire and Cable Department, Bridgeport, Conn. The publication (No. 19-296) lists only

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**JUST OFF THE PRESS**

**ELECTRICAL**
**ESTIMATING GUIDE**

**Covers Over 2000 Wiring Jobs**

This new, entirely different estimating guide has 175 completely worked out charts.

**Authentic, Time Saving—Easy to Use**

This book is easy to use—it has no complicated mathematics or formulas to work over. You merely determine the nature of the wiring, check it in the BLUE BOOK OF ELECTRICAL ESTIMATING and there's your answer—it's the simplest estimating book ever written.

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This book was written by a successful electrical contractor and estimating engineer with over 20 years' experience. It has an entirely different method of determining estimates on wiring jobs. Electrical contractors, journeymen, architects, and engineers will find use for this book every day. Gives time required to do jobs along with complete labor charges in every state in the country. Order this book now at special introductory price of $7.75. As a special offer to Electrical South readers the publishers give a free copy of the latest National Electrical Code Book just for examining the 1956 Blue Book of Electrical Estimating.

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Send me the NEW BLUE BOOK OF ELECTRICAL ESTIMATING and the latest edition of the National Electrical Code Book for 5 days free trial. I understand I may return the book within 5 days and owe nothing. If I keep it I will pay $7.75 plus postage for shipping. I keep the Code Book FREE even if I return the Blue Book of Electrical Estimating.

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ADDRESS

TOWN ZONE STATE

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☐ Send C.O.D. I'll pay postman $7.75 plus C.O.D. fee on delivery.

October, 1956

the cable products used in this type of wiring and is designed to give the electrical contractor the information he needs without the necessity of looking through complete catalogs for the different wires, cables and cords.

The booklet contains application information, specification data and illustrations of all of the products listed.

*For additional data, ask for item B1054, using the coupon on page 84.*

Two and three lamp **cluster spike units** for sealed beam lamp spot or floodlighting have just been made available by **Steber Manufacturing Co.,** Broadview, Ill., and are illustrated in a new bulletin, No. 1040-56, just released.

Ground spike is heavy duty cast aluminum with integral junction box to which either two or three die cast, fully adjustable lampholders are attached. These deluxe units are designed to floodlight the entire front of a home with one easy-to-install fixture. They are factory wired with 20' weatherproof cord sets and eliminate the problem of connecting separate holders and cord sets to a single outdoor convenience outlet.

*For additional data, ask for item B1055, using the coupon on page 84.*

Three new bulletins on **lighting panels** are now available from **Corning Glass Works,** Corning, N. Y.

Bulletin L-110-H on Alba-lite panels (Pattern Numbers 55, 66, 93 and 99); Bulletin L-110-A on the new low brightness lens panel (Pattern Number 70); and Bulletin L-110-C on the new Pattern Number 83 Crystalite panel give complete product and photometric data.

Tables for calculating illumination and light utilization levels are also included.

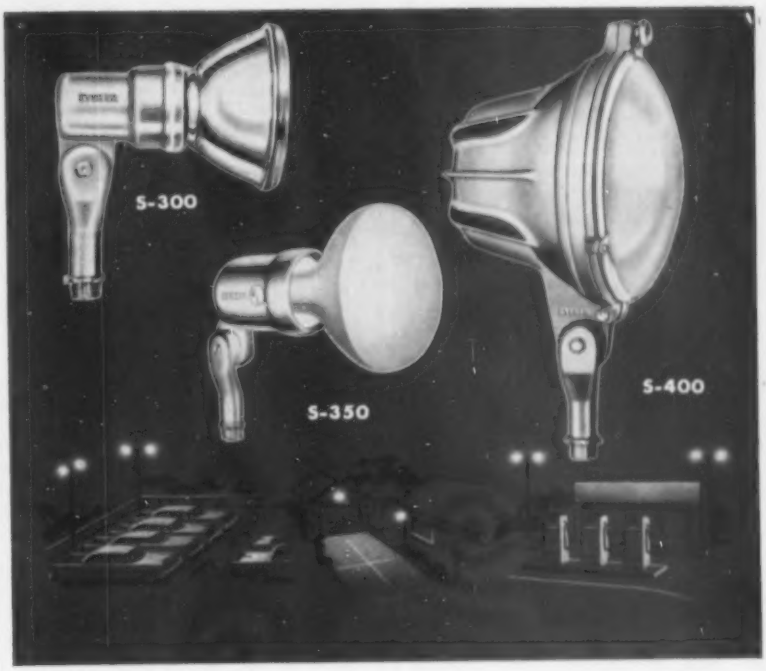
*For additional data, ask for item B1056, using the coupon on page 84.*

A new 36-page catalog by **Canning, Pekara, Inc.,** 2144 N. Wood St., Chicago 14, Ill., covers a complete line of precision made metal **commercial, industrial fluorescent, slimline bodies,** parts and plastic sides. Fixture bodies are designed for quick assembly and wiring, requiring a minimum use of screws.

*For additional data, ask for item B1057, using the coupon on page 84.*

The new lighting publication, **"Technical Data—Folio 56-6,"** from **McPhilben Manufacturing Co., Inc.,** 1329 Willoughby Ave., Brooklyn 37, N. Y., provides technical information that is most helpful for lighting layouts.

Included in the eight-page catalog


# You'll Find More True Economy in Lighting Units by STEBER

Lifetime cast aluminum Steberlites give you economy—economy in quicker, easier installation, lower maintenance costs and in overall lighting efficiency.

Steberlites will solve most every lighting problem easily and effectively. They mount quickly to poles, outlet boxes and walls and can be used as single units or in multi-lamp clusters. Weatherproof articulated joints allow universal aiming. Silicone lamp gaskets assure complete weather protection. A wide variety of Steber fittings lets you tailor-make lighting units to any special requirement.

Steberlites accept PAR-38 and R40 medium or mogul base spot and floodlamps. S-400 shown above uses the 300 watt, 80,000 candlepower PAR-56 lamp. Color lenses are available for special effects.

Write for Steberlite literature now. See why versatile Steber units can serve you best.

*New Condensed Catalog CTC-1 available upon request.*

*Lighting Units* **STEBER** *for Every Need*

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ELLIOTT'S COMPLETE LINE OF FITTINGS

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New

"E-Z-RED" CIRCUIT BREAKERS
12 - 16 OR 20 BRANCH CIRCUITS
SINGLE AND/OR DOUBLE POLE

100 AMP.
FUSIBLE MAIN DISCONNECT
FOR "E-Z-RED" (15 TO 50 AMP.)
CIRCUIT BREAKER BRANCH CIRCUITS

The WADSWORTH ELECTRIC MFG. CO. INC.
Covington Kentucky

WRITE FOR FREE CATALOG


are informative sections on illumination, calculation methods, guides to levels of illumination, lamp data, light distribution classifications and maximum spacing ratios, room indexes, typical coefficients of utilization.

*For additional data, ask for item B1058, using the coupon on page 84.*

**"Church Lighting,"** a comprehensive brochure covering a wide variety of lighting equipment specifically designed for church installation, has just been released by **Pittsburgh Reflector Co.,** 405 Oliver Bldg., Pittsburgh 22, Pa. It should prove useful in planning new buildings, as well as in redecoration.

The brochure illustrates, with detailed sketches plus actual sanctuary photographs, the many types and designs of fixtures available to complement the several architectural styles, both contemporary and traditional.

A specification sheet attached to the brochure gives simplified engineering data on proper illumination and light balancing, as well as complete specifications on each type of fixture.

*For additional data, ask for item B1059, using the coupon on page 84.*

A new lighting bulletin, No. 452, illustrating **recessed and surface lighting** is now available from **The Art Metal Co.,** Cleveland 3, Ohio. The 4-page bulletin describes and illustrates the new high lustre goldtint finish now available with many Art Metal lighting designs as well as including prices and technical information.

*For additional data, ask for item B1060, using the coupon on page 84.*

**Luminous Ceilings, Inc.,** 2500 W. North Ave., Chicago 47, Ill., has available a new brochure giving illustrated installation steps and specifications on their **Modu-Luminus Ceiling,** a luminous ceiling system employing vacuum molded Lumi-Plastic squares, which are supported by the "V" track system. The "V" track system is so designed to eliminate nuts and bolts for assembly and erection. Modu-Luminus Ceilings combine ease of installation, structural rigidity, and flexibility of panel design.

*For additional data, ask for item B1061, using the coupon on page 84.*

A new 52-page catalog shows the complete line of industrial and commercial **incandescent lighting fixtures,** and materials for electrical construction, made by **Spero Electric Corp.,** 20500 St. Clair Ave., Cleveland 17, Ohio. The line includes reflectors, high bays, vaportight units, and floodlights. The catalog gives complete illumination information and cross references to government specifications, and features the newest fixtures for mercury high bay lighting.

*For additional data, ask for item B1062, using the coupon on page 84.*

A new 12-page catalog and selection guide covering the company's complete line of **fluorescent lamp ballasts** is now available from the **General Electric Co.,** Schenectady 5, N. Y.

Designated GEC-983H, the illustrated bulletin contains new data on weatherproof ballasts. The two-color publication also has wiring diagrams, list prices, and electrical specifications for G-E ballasts.

Included are ballasts for general line fluorescents, plastic signs and outdoor applications, dimming and flashing, germicidal fluorescents, rapid-start and circline lamps, and d-c operation.

*For additional data, ask for item B1063, using the coupon on page 84.*

A new 16-page booklet, **"Service Station Lighting by Crouse-Hinds,"** describes basic photometric data and lighting installation information for planning and ordering floodlighting for service stations, and is available from **Crouse-Hinds Co.,** Wolf & 7th North Sts., Syracuse, N. Y.

Recommended layouts for revised lighting show how a station illumination load can be reduced 30 per cent to 50 per cent through the efficient use of a few floodlights. Well-illustrated, the booklet also specifies various types of floodlights, ornamental arms, cluster mountings for lighting pump islands, and indoor vaportight or explosion-proof electrical equipment.

*For additional data, ask for item B1064, using the coupon on page 84.*

An ideal **school lighting and floor plan** as well as architectural sketches with creative lighting ideas is now available through **The Art Metal Co.,** Cleveland 3, Ohio.

Floor plan shows a room-by-room breakdown of the school and the proper lighting to be installed in each room.

*For additional data, ask for item B1065, using the coupon on page 84.*

**How to Light a Gymnasium** assembles, under one cover, the most up-to-date information available on the use of fluorescent and incandescent lighting in various degrees of intensity and location to achieve precise lighting balance. It was written and compiled by a leading lighting engineer, John S. Frizzell, and is published by **Pittsburgh Reflector Co.,** 405 Oliver Bldg., Pittsburgh 22, Pa.

Based on sound engineering prin-

cipal, the booklet discusses the proper architectural and visual efficiency factors relating to uniform, well-distributed gymnasium illumination with a minimum of direct glare. Principals of the three levels of illumination are covered, as are the proper use and coordination of fluorescent and incandescent lighting.

*For additional data, ask for item B1066, using the coupon on page 84.*

A new two-color **guide to modern outdoor lighting** for shopping centers, suburban businesses, and commercial parking lots is now available from the **General Electric Co.,** Schenectady 5, N. Y.

The bulletin, designated GEA-6438, defines basic lighting terms for the layman and provides a guide for planning outdoor lighting installations. It also describes several applications of effective outdoor lighting and shows how adequate lighting helps increase sales in a variety of businesses.

*For additional data, ask for item B1067, using the coupon on page 84.*

A beautifully designed, colorful lighting catalog showing "dramatic, distinctive and decorative" **residential lighting fixtures** has just been released by **Esty Manufacturing Co.,** 112 S. Sangamon, Chicago 7, Ill.

Appropriate for every room in the house, the contemporary new styles are attractively illustrated in the 16-page book. Featured are modern pull downs and matching ceiling fixtures in a variety of metal finishes; glass reflectors with bottom glass diffuser; incandescents for bath and utility room; fluorescent brackets, circline fixtures and a series of economy, all-purpose incandescents.

*For additional data, ask for item B1068, using the coupon on page 84.*

A 72-page catalog describing the complete and expanded line of **lighting fixture products,** ventilating fans, range hoods and door chimes of **Progress Manufacturing Co., Inc.,** Castor Ave. and Tulip St., Philadelphia, has just been issued.

According to Edward K. Raker, vice-president in charge of sales, the catalog is largest in the company's history and provides detailed information about the growing Progress product line of 912 items, including 144 fixtures of the newly acquired Marco division.

*For additional data, ask for item B1069, using the coupon on page 84.*

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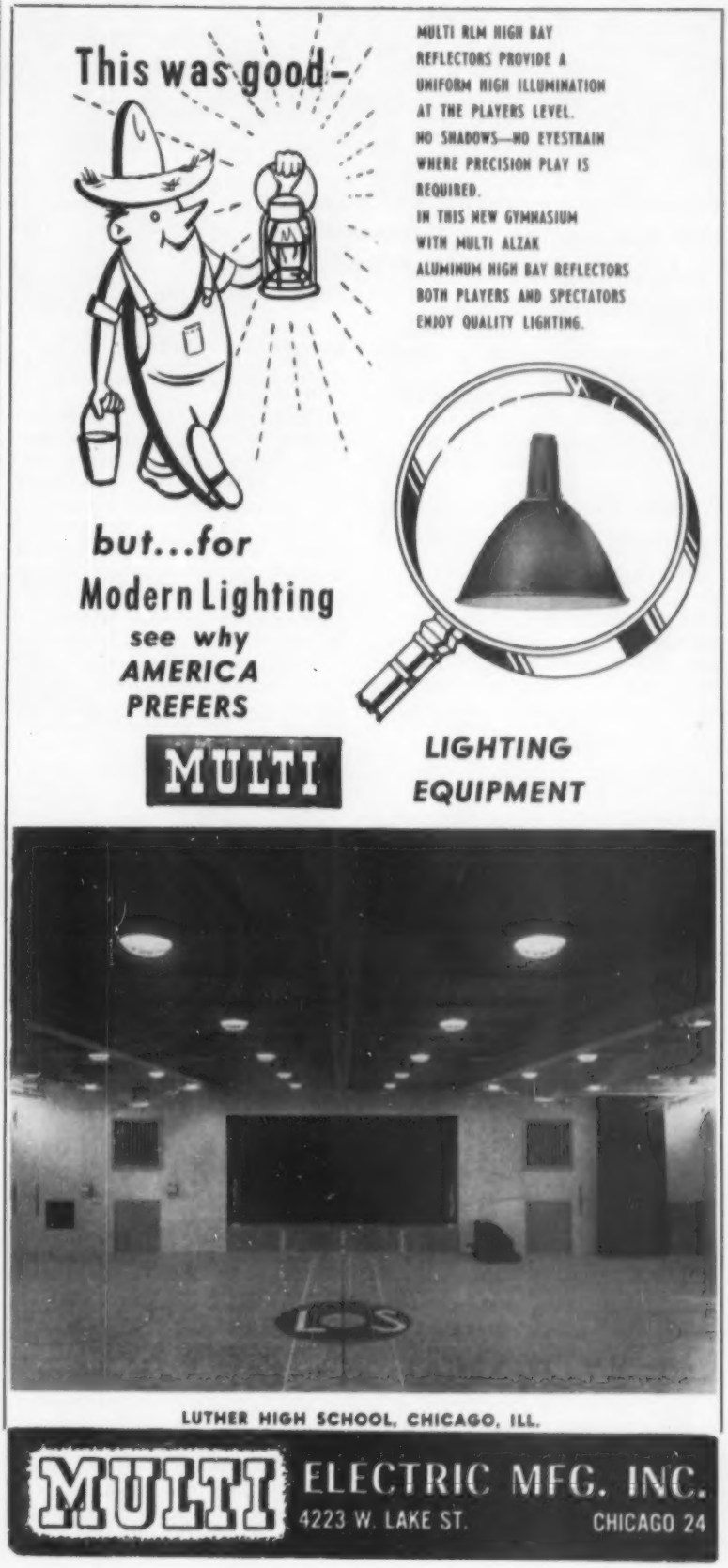
### Changeout method

*(Continued from page 79)*

in conduit to the meter box.

When testing meters in service with instrument transformer, we

take the kw reading, ampere, and voltage reading.

Like all other utilities, the Duke Power Company finds it a hard job to make one meter installation fit all buildings.

The time run board mentioned previously was designed and built by the Anderson meter department and has proved very satisfactory.

### Bank lighting

*(Continued from page 62)*

plexiglass ceiling is made up of 2 ft. by 3 ft. panels which allows for easy maintenance of the lighting from the bank floor.

Since the lighting also serves as the major portion of the ceiling a hung ceiling was not necessary, resulting in a considerable saving by combining the two.

The air conditioning outlets are brought out in the 24-inch furring around walls.

The objectives sought in the planning stages were all obtained with this luminous ceiling. The officers, employees and customers have all been very enthusiastic about the beautiful lighting installed in the First National Bank.

### Knoxville meter building

*(Continued from page 75)*

blacktop are used for parking company and employee vehicles. A steel shed 100 feet long is used to park all meter department trucks and cars when not in use.

The Electric Meter Department considers itself quite fortunate in acquiring this fine plant and equipment to provide its customers with accurate, honest metering as efficiently as possible.

### Transformer loads

*(Continued from page 80)*

The second test is concerned mainly with distribution design, which is based on peak kwhr consumption during the hottest summer months. The same factors for converting kwhr to transformer kva are used in this test, and individual customer load is used to calculate voltage drops. This test either confirms what has gone on before, or proves it to be in error to some degree. It also gives additional information on special customer loads; high demand appliances, such as ranges, dryers, etc., and also low demand appliances with high kwhr consumption characteristics.

Also, since some doubt exists as to the accuracy of the kwhr method of transformer loading determination, where five or fewer customers are involved, it is hoped that current design tests will provide sufficient information to confirm, or disprove these doubts.

The actual procedure in this test involves installation of recording ammeters and recording voltmeters at selected transformers. In addition, recording voltmeters are installed at the end of each secondary originating from these transformers. The test period for each transformer is twenty-eight days. With this set up, an accurate picture of maximum load, voltage drop, and *duration* of both is determined. The results are then compared with calculated results, based on kwhr consumption.

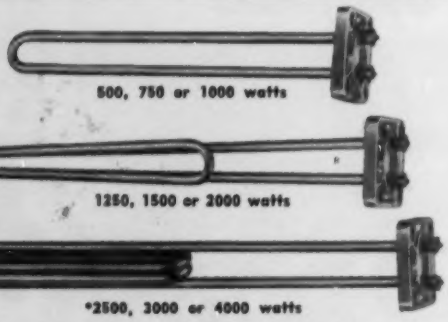
As in the other tests, data from these tests, from all divisions, is correlated by the General Office and a committee of one or two division engineers, to reflect the state wide picture.

Both of these tests will fortuitously fall in with another type of load survey, which has just begun, and will prove valuable for comparison purposes. This survey, called a "Cost Of Service Study," has been requested by the Arkansas Public Service Commission, in connection with the operation of the Arkansas Power & Light Company, for the purpose of ascertaining the cost of service of several classes of customers served by the company.

The principal objective of the survey is to provide information necessary to evaluate one cost component—demand, which is directly related to diversity; which will be measured by means of samples taken from several selected locations.

Since the diversity and coincidence factor of a group of residential customers are fairly constant, if the number in the group is one hundred or more, primary metering equipment of the recording demand and kwhr variety will be installed at such locations that each meter will measure the total demand and energy requirements of the selected group of one hundred or more residential customers.

This survey is to be state wide, and after the several groups of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**VULCAN *REPLACEMENT***

**ELECTRIC IMMERSION ELEMENTS for DOMESTIC HOT WATER HEATERS Type DSF**

MEET ALL REQUIREMENTS of Underwriters' Laboratories. Each unit complete with one composition gasket and individually boxed for shelf stock.

CONSERVATIVE watt density ratings for longer life.

EXTRA HEAVY FORGED BRASS FLANGE eliminates possibility of distortion and resultant leakage.

"POWER BOND" attachment of heater tubes to flange for leakage elimination.

"DIE STRUCK" bands in tubular heater added protection against grounds and shorts.

MOISTURE PROOF PROTECTION at terminal ends by high-heat resistant thermoplastic insulators.

*236 VOLTS ONLY

110 OR 236 VOLTS

ORDER THROUGH YOUR LOCAL JOBBER

**VULCAN ELECTRIC CO., DANVERS 31, MASS.**

Makers of Vulcan Electric Soldering Tools, Solder Pots, Glue Pots, Branding Irons, Heating Units and Heating Devices.

customers have been decided upon, they must be identified and tabulated, so that energy and revenue, with respect to each customer in any measured diversified group can be determined.

It is important that these installations be made as soon as possible, so that summer peak load data will be available.

Daily inspection of each test meter will be required to ascertain that it is operating properly. Responsibility for installations and operation rests with the Meter Department.

In our division, the Ozark, the test meter has already been installed, and is being checked daily as requested. The selected group of customers involved number one hundred and twenty-seven; all residential, with the exception of one small grocery store, which will not reflect unfavorably on the general picture. Calculated load, from data obtained from previous tests, was mainly used to determine current transformer sizes for this installation, and was proved correct by the installation of maximeters on the two primary feeders serving the area; thus further supporting the accuracy of this type of load determination.

### Economic comment

*(Continued from page 4)*

This strength augurs well for the continued strength for the last quarter.

Further good word is the continued interest of major corporations in plant construction and expansion. Repeated surveys of the plans of major corporations show no cessation of building plans well into 1957. This is a good barometer for businessmen to watch.

### Know the law

*(Continued from page 64)*

After the new wiring was done, in conduits, the building contractor could finish its work. Allegedly, Halin was injured while carrying out the building contractor's superintendent's order that an electric panel box be "tied in" before certain joists could be removed. It was in carrying out that direction, that Halin stepped on the defective walkway and was injured.

The court concluded that if such were the facts, the building contractor was liable for negligently providing a defective walkway. But had the walkway not been


# NEW CONVENIENCE

*Saves time and money for you!*

IDEAL SIMPLET

**Now Packs Covers With Conduit Fittings**

for LB, C, E, T, LL, LR and LRL types

**Now, for the first time, you can get covers right with the fittings . . . *ALL IN THE SAME PACKAGE!***

No more searching for covers . . . they are on the job with the fittings! No necessity for ordering additional covers you find later you don't have! This new convenience saves dollars in inventory space, extra handling! You can still get covers and fittings separately if you wish!

**Provides New, Attractive Easy-to-Identify Packages**

assures sturdy, damage-proof protection

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This *new* packaging extends right through the Ideal-Simplet line. They are designed to give you convenient bulk packing of fittings . . . *and covers with fittings* where practical. Notice, too, the neat, quick, product-with-quantity identification label, with catalog number in plain view!

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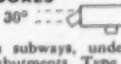


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provided for common use the contractor would not be subject to as great responsibility.

The case was sent back to a lower court for new trial, to give Halin a chance to prove, if he could, that the facts were as alleged by him.

### Testing controls

*(Continued from page 73)*

same amount of light will fall on the cell as on the photo-sensitive tube of the unit under test.

A photo-sensitive street light control is designed to have a "cut-off" point at a level a predetermined number of foot-candles above the "cut on" point. The idea is to prevent fluctuations in operation. There is also incorporated in the design a delay circuit between the cut-on and cut-off point to prevent premature operation by a transient light source. These two values are the important ones for calibration purposes. In most cases the cut-on point will be one foot-candle and the cut-off point will be two foot-candles with a differential of one foot-candle and a delay of from six to fifteen seconds.

In order to simplify the calibration we have provided two adjustable light sources. This is obtained by using three flood lamps, one to provide the low value of light and which is adjustable by its own venetian blind, and all three lamps to provide the high level and which is adjusted by another venetian blind arrangement. A small toggle switch is provided to switch from one to the other and thus obtain two desired values of light quickly. This reduces the time and effort of calibration a great deal.

For accurate setting of the "cut-on" and "cut-off" points either a microammeter placed in the plate of the amplifier tube to indicate the tube conductance or a voltmeter placed across the signal relay to indicate the rise of the voltage is normally used. We have used both in our calibration box and have placed them in the circuit by means of tube jacks. This enables the quick and easy hook-up of the meters and provides a very good method of calibration.

All of the above has been mostly a development and improvement of previously used methods. We have developed independently a system for time testing the controls which is believed to be unique in the field. This is accomplished by letting the control which has been thoroughly calibrated perform automatically the switching as described above of the two values of light. Thus, a continuous sequence of On-Delay-Off-On-Delay-Off, et cetera, is obtained which will accelerate in a few minutes the number of operations the switch would make in many months. This type of test is invaluable in a control which will operate satisfactorily for a few times but due to some inherent defect will soon become faulty. Cases of this type are admittedly few but are very troublesome when they are encountered.

The use of this equipment has already proven to be far superior in accuracy and efficiency to previously used methods and it is felt that after a control has successfully passed these tests then it is capable of many trouble-free months of active service.

### New lighting sources

*(Continued from page 36)*

quartz tubes which have already won a range of diverse uses; new PAR lamps for precision applications; new color tint lamps for decorative treatments . . . all of these offer outstanding features.

#### New type fluorescent

More recently, and perhaps more spectacularly, has come the announcement of the new "Power Groove" fluorescent lamp. This lamp, soon to be available, permits a radically new concept of use in this type source. This accounts for the spectacular element derived from the striking new design of the lamp. It doubles the light output of present tubes of equal length.

The increased light is made possible by a series of grooves or dents along one side of the eight-foot lamp. At the grooves the new lamp is nearly U-shaped in cross section. This design permits a maximum circumference of the tube while constricting its inside area. The larger output results from an increase of the lighted tube surface, the higher wattage at which the lamp can be operated, and the more effective use of energy within the tube. The development is a "break through" of what seemed an insurmountable barrier. The huge gain in output is achieved with no loss of efficiency. By doubling output a greater gain in light per foot has been realized

than in all previous improvement since the fluorescent lamp was first introduced in 1938. This source produces five times as much light per foot as the original fluorescent lamp.

The new lamp will have its early applications in industrial and commercial areas. Thereafter, its advantages will be sought for schools, public buildings and practically all major fields. Outdoor floodlighting for instance, could employ it with great benefit.

Everywhere higher footcandle levels are sought, with maximum maintenance economy, "Power Groove" installations will be in demand. The development is a landmark in the history of electric illuminants. It is a part of the fabulous productivity potential which makes some economists speak of our society of "automatic abundance."

Where "Power Groove" speaks for science and technical advance, the new line of colored lamps for home and decorative use, announced by GE in August, speaks for art in lighting. These lamps come in popular household sizes and are described in part by their names. Thus, "Sky Blue," "Spring Green," and "Sun Gold" added to the well known pink lamps, renamed "Dawn Pink," comprise the line of "Coloramic" lamps. For homemakers, or anyone with a decorative problem requiring a touch of color, here is a complete palette. The new line responds to consumer demand.

General Electric has put more than 750 new lamps on the market since 1950. In this brief review of sources we have mentioned just a few striking developments of the past year. If they merit more enthusiasm today it should be understood that they are the fruit of accumulated experience. The hundreds of lamps introduced in the early fifties had their part in the know-how that made possible the very recent advances in both filament and fluorescent lamps.

### Business in lighting

We have noted contributions from science and art in reviewing recent advances. The business of lighting has paved the way for every step in this record of progress. It has anticipated market opportunities, and it has increased the sensitivity and frequency of its reports on uses of existing products. It has broadened and improved its facilities of service to consumers. It has responded to the heightened intensity of competition.

Application techniques anticipate regular and special advances in sources. As part of this look at progress I have included some examples of installations that are demonstrating to consumers how lamp improvement can be translated into better business, higher productivity, and fuller satisfaction in working and in recreation. These, of course, are just potentials . . . to be realized as other factors are effectively combined.

Readers of ELECTRICAL SOUTH rely on its articles not only to discover what is new that can be applied to their particular interests they want to see if these opportunities can be developed with *their* customers. Electrical progress is market wide, activity is intense in every sector. In new construction, where incentive is strong for the last word in modernization, this is easier to keep in mind. We should remember, however, that there is a constant challenge in the backwardness of older properties. Progress, represented by greater usefulness, is extended by almost any type of electrical modernization in such properties. All too often, however, one type of improvement (it might be air conditioning or elevators) is sought for the whole remedy. If we begin with lighting as we make our plans, we can see more clearly what we must have with it to achieve fully successful modernization.

### Modernizing by relighting

*(Continued from page 43)*

direct-indirect fixture over the lobby area.

A narrow corridor utilized fluorescent angle bracket fixtures located along the junction of the wall and ceiling along one side of the corridor. Slightly off center along the corridor ceiling is a series of shaded incandescent fixtures which illuminate pictures mounted on the walls.

The manager's office is illuminated to an intensity of 100 footcandles from a luminous ceiling covering nearly all of the ceiling

A large conference room is lighted with two 4' x 4' recessed units, each lamp with six 40-watt Rapid Start lamps. These two units


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are supplemented with six 300-watt recessed incandescent units.

Air conditioning for the building is supplied by a five-ton heat pump recessed in the wall of the conference room and concealed by a panel door matching the wall paneling of the room.

### New Orleans program

*(Continued from page 51)*

on the effectiveness of the training program. The Certifying Committee has been set up and is ready to tackle the job of certification.

Following is an excerpt from a letter of one of the participants who had to drive over 60 miles each way to attend the meetings:

"I think you and your company are to be commended for participating in the Certified Lighting Program. I thoroughly enjoyed the lectures, and appreciated the opportunity to attend."

### Mississippi trend

*(Continued from page 33)*

and home owners to improve the lighting and also working with new home builders and promotional home builders to incorporate good lighting as a part of the original plan. They also conduct group meetings showing users the advantages of "Lighting for Living" in the home.

In all types of occupancies, there is a better acceptance of quality lighting incorporated as part of the architectural structure. In the case of offices, the low brightness completely shielded luminaire is being used more than in the past. Much of the present lighting in the home consist of valance, cornice, and niche lighting, that is built on the job. The GE Lighting Recipe Handbook has been a big help in improving home lighting. The exterior lighting has consisted in most cases of mercury vapor luminaire mounted on steel standards for area lighting and flood lights for lighting the exterior of the building.

We are very fortunate to have in our area progressive electrical engineers who incorporated good lighting as part of the electrical design. However, there is a real need to get the electrical contractors and distributor salesmen more active in promoting lighting modernization especially on smaller jobs.

A Certified Lighting Bureau has been organized for the Jackson area. The first training course in connection with this began in September. There are 26 contractors and distributor personnel enrolled for this course. It is certain that the setting up of this Bureau, and the training program in connection with it, will help materially to promote lighting modernization in the smaller commercial and industrial establishments.

### Hardware store lighting

*(Continued from page 37)*

Three phase, 4 wire, wye service constituted the main service to a 36 circuit switch box mounted on the rear of the partition that separates the sales area from the warehouse in the rear.

Before the acoustic-metal drop ceiling was installed by the general contractors, Watts electricians roughed in conduit raceway the entire length of the store, with one conduit to each steel beam that acted as the foundation for the fixtures.

After runways for the acoustic ceiling were in place, stud-bars for the no-bolt boxes were fastened to the steel beams forming the lower part of the roof trusses with a Ramset gun. Then, the acoustic material was placed by the contractor, after which the Watts electricians mounted the rows of fluorescent fixtures.

The fixtures are Guth, 12½ inches wide, shallow surface factory fabricated luminaires with two rows of 40-watt tubes. There are nine 48 inch fixtures in each row, or a total of 72 for the entire ceiling, providing a total wattage of 5600.

Along each wall are 8 "Swivelette" hanging stem fixtures containing 150-watt floods, to provide spot illumination for the sidewall displays. Flush ceiling canopy lighting was installed to provide lighting for displays in the store windows up front.

In the electrical business since 1916, C. A. Watts, now president of local chapter of NECA, was joined by partner Chris Haynes about 10 years ago. Last year, the firm was incorporated with Mr. Watts as president and Mr. Haynes as vice-president.

In contracting all types of residential and commercial wiring, each partner shares the job of estimating and supervising. At present, the firm employs 13 electricians—10 journeymen and 3 apprentices. Several of the journeymen have been with Watts since 1945.

### Lighting for attraction

*(Continued from page 39)*

Motel Association, managers feel that the effect of lighting is psychological in that it creates a gay and cheerful atmosphere and permits a great deal of activity to be seen from the outside to which


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One noticeable trend which helps the visitor decide to stop and enter is the use of wide expanses of glass on lobby fronts with unusual and attractive interior chandeliers or ceiling fixtures for beauty and attention. The effect is to present a pleasing and inviting interior. Some double-wing motels have joined the wings with the lobby built on the second story level over a brightly lighted entrance to court parking areas. The extra height together with large glass fronts afford the maximum view from the streets. Ample use is made of recessed ceiling spots, cove lighting, and novel ceiling fixtures for decorative lighting.

As in most places where exterior lighting is used for attraction there are several examples of gaudiness where unrestrained use of neon tubing and spotlights results in a glaring collection of fixtures rather than an attractive motel front. Significantly, those motels having the most attraction were ones that combined the lighting with the architecture of the building. One of the better examples of this is the Dunes Motel. Here the construction features are illuminated at night without any hint of being overly bright or glaring. Reflecting the sand dune desert motif by use of warm-color materials, the curving red brick wall at one end has low intensity lighting from six 150-w shielded down-lights, and joins the front wall which is composed of individual receding sections, each being illuminated by vertical neon tubing installed in a cove behind the section. The large white louvers reflect this light. The end of each wall section is emphasized by shielded 150-w PAR-38 spots from above. The entrance drive is made cheerful and inviting through the use of nine 3′ square diffuse plastic fixtures having three fluorescent lamps. The columns supporting the canopy are lighted by PAR-56 spots with amber filters to promote the desert sand color tone.

The remaining third of the motel front features 24 vertical stained-plywood louvers spaced at 2′ intervals, at the base of each a spot is aimed upward to illuminate both the louvers and the eave above them. The fixture shield employs a V-cut on the side next to the wood, giving a V-shaped light pattern that spreads until the full louver width is lighted with a soft natural-wood glow.

Landscaping is highlighted by the use of mushroom fixtures with 100-watt lamps at the front while the taller plants have 150-watt spots at the base or behind to either illuminate them or create a silhouette. The large sign facade which is a dominant part of the construction features a chariot and driver of Egyptian vintage illuminated by spotlights while the Dunes sign is composed of golden plastic letters housing neon tubing.

### Lobby lighting

The main lobby, which is plainly visible from the street for attraction, achieves general lighting through the use of neon cove lighting which creates spaciousness and brightens d r a p e r i e s, recessed spots in the ceiling, and large table lamps. But what catches the eye first is the huge and attractive sunburst ceiling fixture. Fashioned of gleaming copper, this unusual decorative fixture has over 400 small spired Dutch lamps of


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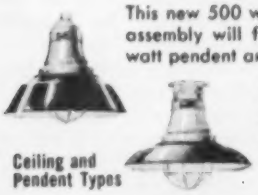

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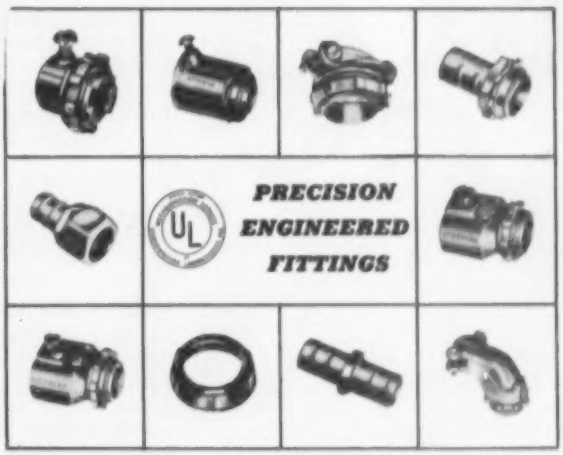


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medium intensity. It was designed by a Cuban firm, fabricated in Cuba, and shipped here. A novel treatment of the key and mail cubbyhole section is done by backing the entire section with translucent plastic, behind which are mounted 4′ fluorescent lamps to form a luminous panel. The east side of the lobby opens onto a deck and pool area, beyond which is the Atlantic Ocean.

A few doors north from the Dunes is the Driftwood Motel which features a large piece of driftwood mounted over the entrance facade and strongly spotlighted with a cove light border along the top and one side to frame the wood centerpiece. Large wood latticework sections at each end of the motel have multi-colored neon squares recessed to the rear of the cubicles.

### Colonial style motif

Still further down, the Colonial Inn presents an entirely different motif of colonial style. Its frontal white wall with black shutters becomes blazingly alive at night through the use of shielded spotlights on each side of the tall, imposing columns at both ground and second floor levels. Recessed spots in the eaves are of higher intensity and wash the front walls with white light to achieve the hospitable and comfortable air of colonial mansions in an era gone by.

One of the newest and perhaps most unusual motifs is found at the recently opened Thunderbird Motel whose striking symbol of proud identity stands dominantly atop the structure. Outlined in bold relief by neon tubing behind it, the Thunderbird is framed by neon cove lighting on the facade top and side. The symbol thunders for your attention and then releases it to the drive entrance and sidewalk canopy brightly lighted by some 125 recessed 150-watt spots. Contrasting are the front walls of red brick illuminated with spots from eave and shrubbery.

The trend, if any, along this motel row has been to try to outdo the other fellow in design and attraction features. This has led to the charge by some of being garish by day and gaudy by night. That is debatable but, if true to any extent at all, it is principally due to the motels being squeezed together side by side in a continuous row because of the extremely high price of real estate on the beachfront. Nevertheless it obviously is a worthwhile venture since four new motels are under construction.

It was noted that one of the buildings, while still in the fresh plaster drying-in stage, had already installed a drive-way canopy full of recessed spotlights which were merrily burning away in a sea of construction. Perhaps it was premature lighting for attraction. Or does anyone know whether good lighting also helps to hasten the setting of fresh concrete?

### Lighting for expansion

*(Continued from page 29)*

changed to meet tenant requirements in the leased section of the building. 1,005 of Sunbeam Lighting Company's recessed HPLM-5600 series were selected to fulfill this request.

For even greater flexibility and adaptability to change, these troffers were recessed in a snap-in-type T-Bar ceiling system, integrated with heating, air conditioning and acoustical tile panels of the ceiling itself. As need dictates, the units may be relocated at will; or for varying lighting requirements without location change, the fully framed, hinged panels of miniature-celled plastic louvers may be replaced with other diffusers such as smooth, dropped or designed Plexiglas or various glass light control mediums such as Holophane's low brightness Controlenses or curved Corning Albalite.

In executive offices, the 5600 series troffers were arranged in rectangles to conform to the room peripheries, while in open clerical areas fixtures were aligned in continuous and intermittent continuous rows on six foot centers.

These large spaces can be partitioned later if required, without appreciably altering the illumination qualities of the divided space. The resulting lighting intensity of this planned system is 70 foot-candles, maintained. Electrical installation throughout was by Fishbach and Moore of Texas, Inc., Dallas.

### Luminous ceiling trends

*(Continued from page 32)*

rounds and its effect upon people.

A new development in plastic diffusers serves the multi-function of diffusing light and absorbing sound. It is a single layer of perforated vinyl laminated for suitable light transmission and sound absorption. Thickness runs about .020 inch and it may be used either flat or in corrugated forms.

Another approach to sound control is the use of large area rows of ceiling diffusers alternating with rows of conventional sound absorbing ceiling material. In other words, sound and light control share the ceiling areas. Except as in the multi-functional diffusers this seems to be a logical solution.

Sound barriers above partitions have been improved. Support has been provided from the diffuser grid which eliminates the fastening of the barrier to the ceiling slab or beam. Sponge rubber seals at the top and ends of barriers over-come sound leaks at the hard-to-seal joints. This construction removes most of the headaches from installing sound barriers.

### State and municipal codes

Various city and state codes are being re-written to include luminous ceilings. Enough basic testing has been conducted to provide pretty realistic fire protection data.

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In general most of the codes written today restrict 100% luminous ceilings to the same limitations as those that specify the rate of interior trim flame spread. This means that large area luminous ceilings will have fire hazard classification rating not less than the interior trim in the building.

Restrictions are less severe for luminous ceilings of one-third the room area in most codes which allow the use of fire retardent and slow-burning plastics. Although the aggregate area allowable varies along with the plastic requirements, this latitude seems reasonable.

### The packaged idea

To speed up the installation time by eliminating fitting at room perimeters one manufacturer has standardized a luminous ceiling line with several common room sizes. The luminous area fits the room leaving the tolerance in the air at the perimeters. This plan provides a packaged set which lends itself to the lowest possible installation costs and still creates the powerful luminous ceiling effect. It provides an economical modernization device at standard unit price.

To sum up: an outstanding characteristic of the luminous ceiling is its ability to set the tempo for a room. Its popularity will increase, and I have attempted to outline here some of the trends which are now apparent. So many of us are working toward improvements that progress in the 'fifties has been remarkable, and we may expect more of the same in the future.

### Brightness control

*(Continued from page 28)*

Again, the engineer uses a technical term to describe this brightness condition. For instance, if a desk top has a reflection factor of 30% and 100 foot-candles is measured on it, the engineer says it has a brightness of 30 foot-lamberts. On the other hand, if only 50 foot-candles is measured on the surface, then half the brightness prevails or 15 foot-lamberts. In other words, foot-candles times reflection factor equals foot-lamberts.

Ordinarily in general office lighting, the horizontal foot-candles produced are about twice that of the vertical foot-candles. On this basis, it is easy to see that if a desk is finished with 30% on its horizontal surface as a reflection factor and 30% on its vertical surfaces, the brightnesses in foot-lamberts will be different because of the different foot-candles delivered. This is the reason why it is so important to have light finished desks not only for its top but also for the vertical surfaces. This applies to all other equipment used in offices.

### Vertical surface brightness

Let's take an example of again reading letters of white bond paper that has a reflection factor of 80%. If 100 foot-candles is provided on this paper, it has a brightness of 80 foot-lamberts. If a nearby desk has vertical surfaces with a reflection factor of 30% with 50 foot-candles measured on the surfaces, the brightness will be 15 foot-lamberts. This gives around 6 to 1 as a brightness ratio or well within the prescribed limitation of 10 to 1.

However, should the desk have a vertical reflectance of 8% with 50 foot-candles on it, the brightness becomes only 4 foot-lamberts. Now we're really in trouble because the brightness ratio then becomes 20 to 1.

As mentioned before, many manufacturers are providing light finishes for equipment used in offices. Even telephones are available in higher reflectances and lighter colors. Light floors are more prominently used today than in the past. This is an asset to better seeing.

The reason lighter floors are becoming more predominant is because contrary to the general opinion lighter floors are easier to keep clean than dark ones. Fortunately this makes for easier seeing at the same time.

### Third brightness ratio

The third brightness ratio requires that a value of 20 to 1 is not exceeded between luminaires and surfaces adjacent to them. The significance of this statement is simple in that it means that the brightnesses between the luminaires and the ceiling should fall within the 20 to 1 ratio. Where luminaires are near walls, the same conditions prevail.

Many luminaires are available

having proper brightness control that will and can provide high-seeing comfort. Generally, this is easily accomplished with what is known as suspended type luminaires. Such units usually find their best application when ceilings are around 11 to 12 feet high. Then the luminaires may be suspended 24 to 30 inches. With proper brightness control of the units, light is cast toward the ceiling, which is highly desirable. With proper spacing of units, a nice uniform ceiling pattern or brightness may be obtained and comply to the 20 to 1 ratio.

The selection of the suspended type luminaires, as mentioned, should be carefully determined and, more properly, by a lighting engineer. There are many luminaires that provide brightness ratios up around 50 to 1 and even 100 to 1. There are few luminaires available that will fall within the proper brightness ratio if mounted directly to the ceiling.

Modern office buildings are constantly lowering ceilings due to overhead equipment being used today including, of course, air conditioning ducts. Ceiling heights less than ten feet are found in many new office buildings. Because of this condition, it has been found necessary to use recessed type luminaires better known as troffers. Extra precaution is necessary where luminaires of this type are used since brightness ratios may exceed 100 to 1. Where troffers are used, it is almost a necessity to have all light equipment in an office area. This includes light desks, floors, and other operating equipment.

The best type of troffers to use for reasons of comfort are those which properly control light rays. Such troffers are of the Alzak parabolic aluminum type or those fitted with lens control panels on the bottom of units.

Perhaps a word of caution should be expressed here. Beware of suspended luminous sided luminaires that have high brightness. Watch out for narrow four lamp or even three lamp luminaires. Be extremely careful in choosing any type of luminaire for surface mounting. Exercise extreme care in selecting troffers. It's difficult to get proper brightness control with ordinary diffusing glass bottom, plastic panels, or louvers of the egg crate type with baked enamel white finishes. Be particularly careful of designs which include three lamps, and question four lamps in a troffer of the common variety measuring one foot wide.

Good comfort is obtainable with troffers two feet wide having two lamps. Question the use of three lamps in such a troffer and ward against four lamps.

Let it again be said that all finishes must have proper reflectances in offices where troffers are used.

One other precaution: windows should be properly covered lest the entire lighting system within the room be ruined from a comfort point of view by window glare.

### The 40-to-1 limiting ratio

The last in the series of brightness ratios requires that we stay within the limit of 40 to 1 anywhere within the environment of the worker. Simply stated, this means that anyone sitting at a desk

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should have proper brightness ratios controlled within the entire room. Thus, anywhere within the normal field of view brightness limitations should be carefully considered.

As an example of this, if within the normal field of view a filing cabinet has a brightness of 5 foot-lamberts as against 1000 foot-lamberts for a luminaire on the ceiling, the brightness ratio would be 200 to 1. Taking the same example with the filing cabinet and say a parabolic aluminum troffer having a brightness of 100 foot-lamberts, the brightness ratio would be 20 to 1 or well within the prescribed limit of 40 to 1.

That's the story of brightness ratios and interior surrounds. It's a story of paint and light properly balanced and controlled. The interior surrounds should be properly considered. Such considerations should be given toward light finishes as shown in the accompanying diagram, illustrating recommended reflectance pattern for a typical school room.

Sometimes interior decorators work magic with delightful interior finishes which react favorably from a psychological point of view on workers. Occasionally, interior decorators use light intriguing types of wallpaper in offices, which greatly improve the aesthetic taste of the room.

What has been said about office lighting generally applies to school lighting as well. One significant difference between schools and offices lies in the fact that our greatest problem exists with classroom lighting. These rooms are generally of a specific size and small compared to many general office areas.

Economics are important both in office and school areas. Sometimes schools are besieged with economy beyond that of office areas. However, let it be said that comfortable lighting need not be expensive in either case. How much money is spent depends entirely upon existing conditions of the areas to be lighted.

### Lighting a classroom

For classroom lighting, generally, suspended type luminaires may be used and are most popular. Ordinarily it will be found that such units are less costly than any type of troffer. Usually, schools have ceiling heights that can readily take suspended type luminaires.

The IES Recommended Practice for School Lighting has prescribed a minimum of 30 foot-candles on desk tops for students. This Recommended Practice also recommends a minimum of 30 foot-candles on chalkboards, which as previously described become vertical foot-candles.

Many classrooms today are not lighted to the minimum of 30 foot-candles but exceed these values to a point where 50 foot-candles on desk tops are becoming popular.

In the ordinary sized classroom, two-lamp 40-watt fluorescent suspended type luminaires are commonly used. Many units of this type will produce the 30-foot-candle average over desks if two rows are used with seven units per row. Such a system is economical since ordinarily only two outlets and two circuits are required. To obtain 50 foot-candles on desk tops, three rows of fixtures are required. This calls for three outlets and two circuits as a rule.

The first system of two rows does not provide 30 foot-candles on the chalkboards and, therefore, falls short of being a good lighting system. The second installation of three rows is likely to provide the 30 foot-candles on chalkboards, and therefore, falls within the prescribed recommended practice.

Chalkboards may be properly illuminated with fluorescent strip lighting units mounted above them. Such units should be equipped with reflectors to produce a good uniformity of illumination on the chalkboards. Another way to accomplish this is to use incandescent "spot" light units on the ceiling. In both instances, extra cost is involved.

The accompanying school room photo shows a lighting system with fluorescent units that provides the required 30 foot-candles on all desk tops as well as 30 foot-candles on chalkboards. In addition to this, the comfort of the lighting system is very good. Such a system meets all of the requirements of proper quantity of light as well as quality of lighting and economy. This system uses two rows of six luminaires per row and one cross row in front of the room of four luminaires. Each luminaire is considered as being 4-foot long and equipped with 2-40 watt fluorescent lamps.

With today's design and development of luminaires and proper balances of brightness ratios, good lighting may be applied economically. There is no reason to gamble with eyes. Perhaps it is in keeping to say that eyes are precious and light is cheap.


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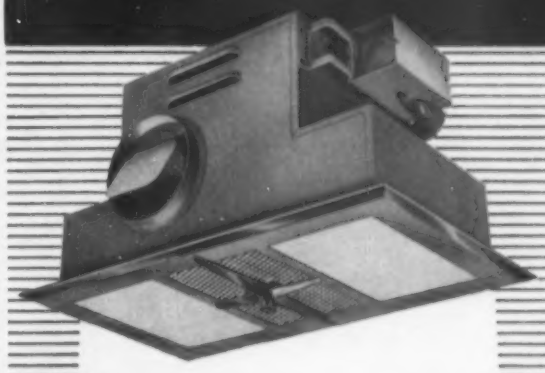

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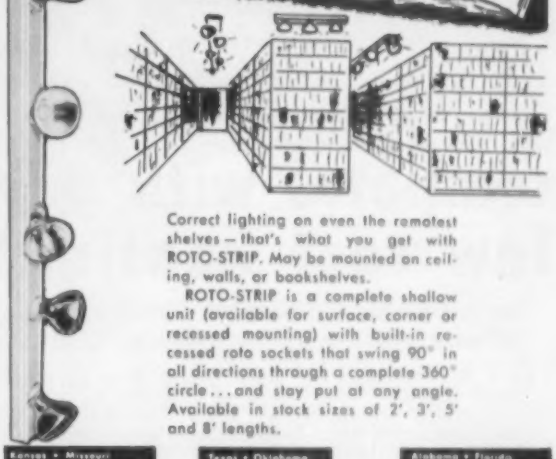

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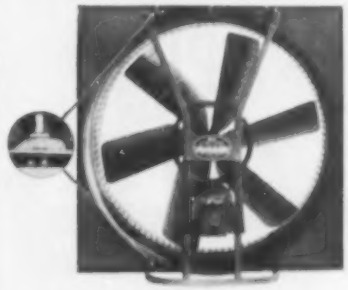

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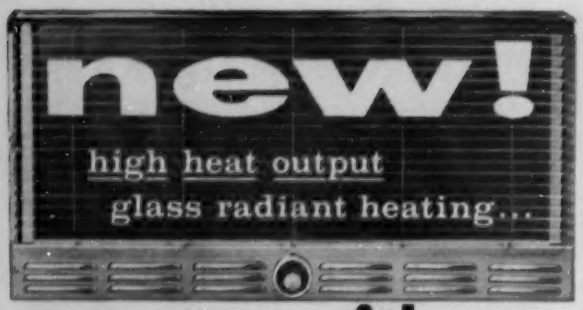


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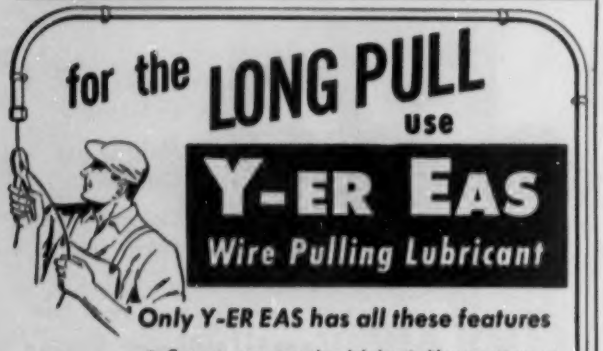


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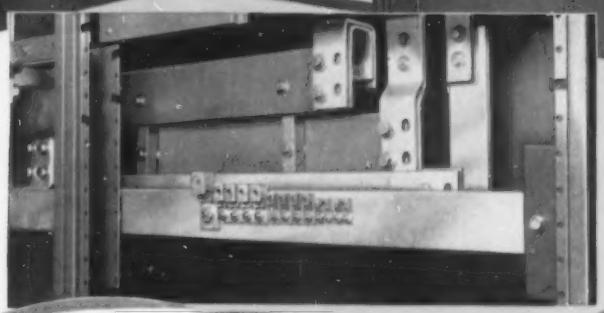

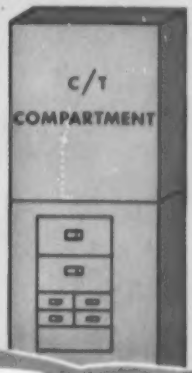


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